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ABSTRACT

This annual report discusses several topics related to the work of the Clinical Center for Child Development at Hokkaido University in Sapporo, Japan. The articles are: (1) "Other's Voice/Own Voice: (Re)production of Other's Voice and Its Apprenticeship in Japanese Young Children" (Shing-Jen Chen); (2) "Intersubjectivity during Bottle Feeding: How Mothers Talk to Their Premature Infants" (Jean Ashland); (3) "An Inquiry into Young Children's Development of Self through Emotional Communication with Their Family Members" (Yuko Kanaya); (4) "The Relation between Emotionality and Empathy-Related Responses in Japanese Young Children" (Nobuko Hoshi, Emiko Kusanagi, Shing-Jen Chen, Yoshinobu Takahashi); (5) "Masking of Negative Emotional Expression in 3-Year-Olds" (Yoshinobu Takahashi, Emiko Kusanagi, Nobuko Hoshi); (6) "Physical Characteristics and Food-Intake in Japanese Young Children" (Yukari Shirotani, Masahiro Horiuchi, Kiyoshi Moriya); (7) "The Relations of Children's Narratives about Hypothetical Situations to the Contemporaneous Empathy-Related Responses and the Future Moral Development"(Emiko Kusanagi, Nobuko Hoshi, Yoshinobu Takahashi); (8) "'Jiyang': Long-Term Nonparental Child Rearing in China" (Dahui He, Shing-Jen Chen); and (9) "Toward a Sympathetic Propensity Theory of Mind" (Shigeru Nakano). Each article contains references. (KB)

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RESEARCH AND CLINICAL CENTER FOR CHILD DEVELOPMENT

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Shing-Jen Chen,
Takashi Furutsuka, Yukari Shirotani

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OTHER'S VOICE/OWN VOICE: (RE)PRODUCTION OF OTHER'S VOICE AND ITS APPRENTICESHIP IN JAPANESE YOUNG CHILDREN.

Shing-Jen Chen
Hokkaido University

> ...the voices of the others are indispensable in the "theater" of our inner speech.
>
> Kozulin (1990), p. 179.

> ...I must find myself in another by finding another in myself.
>
> Bakhtin (1984), p. 287.

INTRODUCTION

We listen to others before we speak. Even from the very beginning of our lives, the voices of others invoke images and gestures in our mind. They direct our attention to some part of the world or some part of our own consciousness. Except for the first cries and other so-called vegetative sounds that we produce, our first vocalizations are probably evoked by the voices of others. These voices of others serve as guides and objectives, comforting, enraging, encouraging, and saddening us, before some of them are echoed, transformed, amplified and (re)produced, to form a part of our own voices.

In this paper, I am going to focus on a particular genre of voices observable in children's daily interaction with peers. What distinguishes this particular genre of voices from ordinary voices of children is their seeming inappropriateness as children's expression, and their echoic quality. While children's ordinary utterances have the 'childlike' characteristics appropriate for children, this particular genre of voices to be described in this paper can be recognized as more appropriately belonging to the adults. Furthermore, they have the quality of being voices borrowed by children. These voices of the adults exist in the child's daily life: voices heard in 'real' life, or utterances enacted in story telling by teachers, parents, or conversations in mass media such as TV or movies. From among the larger pool of voices of the adults which children encounter, or are exposed to, there is a smaller set of them which attract children's attention, for their adult-sounding quality, and no doubt, for their special effects whose implications on power politics children begin to understand and to make use of in their interaction with peers.

As these special voices include not only subtle interpersonal relationship (such as superiority, friendiliness, antagonism, casualness, etc.), but also specific context requirements, it probably takes a few years before a child can begin to quote this genre of voices, assuming the intonation and/or accent of parents or adults, in order to imple-

ment a different effect than what the child's own 'naked' voice can achieve.

At some point in development a child begins to understand some aspects of what these voices mean and their effects on interpersonal politics by being in the context, either real or staged. This prelinminary undstanding then prompts the child to (re) produce them when opportunity arises. The implementation of assuming another's voice provides the child with opportunity to see its effects on other participants and on oneself. From an ontogenetic, developmental point of view, these voices of the others (adults) have to be implimented, rendered into sounds in the air, with actual participants present in order for the speaker to experience the multitudinous features of the voices by observing the reactions of the participants, by observing the numerous effects of the particular implementation on both others and on the child him/herself. In this sense, theoretically it is possible to find subtle intra-individual variations in the renderings of a particular voice, especially in early childhood when children are exploring this area of their experiences.

THREE EPISODES OF CHILDREN (RE)PRODUCING VOICES OF THE OTHERS

1. The Voice and Its Echoes

Here we observe how a specific adult voice arises and echoes among children, and the different appropriations, presumably for political ends.

Episode 1: 'Chotto. Anta'. 97/12/04.

Participants observerd were 3 girls: YKI, NAO, and STM, all five years old.

Place: Around the wooden tower in the sand pit area, outside the building of the kindergarten affiliated to RCCCD.

Playing around a wooden tower-like construction in the middle of the sand pit, the three girls occasionally exchanged words while one boy (out of sight) was playing nearby by himself. Two of the girls (NAO & STM) started to quarrel about the ownership of a plastic shovel, but they soon solved their problem by resorting to *janken* ('paper, scissors and stone', See Chen & Rand, 1996). The other girl, YKI, who was at the platform on the top stair of the tower, while STM and NAO was standing below just outside the tower. Having perhaps overheard the quarrel between NAO & STM below, YKI began assuming an adult's voice, admonishingly.

01 YKI: Kamawanaide okinasai. (You leave each other alone!)

NAO looked up toward YKI and protested, finding no real word.

02 NAO: Wa. (Bah!)

03 STM: Amari tonchinkanda. Ahaha. Aha. (Sounds quite nonsensical.)

STM started a forced giggle at-(k) anda. To this, NAO spoke insultingly, invoking an adult's voice.

04 NAO: Aho. Anta. Shikkari shinasai. (You fool. It's time to get smart.)

Upon hearing NAO's voice, and seemingly being reminded of the expression and its meanings, YKI immediately utterred the voice downward to where NAO and STM were. However she did not mean to call anyone's attention by this.

05 YKI: Chotto. Anta.

This was overheard and echoed (within less than 0.3 sec) by the boy who was nearby but was not in sight. As this expression usually has a overtone of disapproval, the boy's utterance was perhaps a reaction to this.

06 BOY: Chotto. Anta.

YKI stopped her play and stepped down one level toward NAO. By now STM had moved a short distance away from the tower's entrance. She started stirring the snow in her plastic pail, paying no special attention to either YKI nor NAO. YKI announced to NAO, commenting her relation with STM.

07 YKI: Atashi STMchan no koto, anta to iu. (I adress STM using the word ANTA.)

There was a 2.5 second silence before NAO managed to match up, by repeating the same.

08 NAO: Atashi mo (..) STMchan no koto anta to (....). (I too address STM using the word ANTA.)

Stepping down further and turning to STM over the wall of the tower below, YKI now applied the expression with the intention of geeting STM's attention, but STM continued her play without looking up.

09 YKI: Anta. Chotto. Anta. (You. I say, hey.)

Watching YKI's unanswered attempt, NAO laughed and repeated the expression mockingly, with a twist of accent.

10 NAO: Hehe. Anta. Chotto. Anta.

YKI's first utterance of 'Chotto anta' (05) was simply an echo of NAO's immediately previous utterance (04) which contained the word 'anta' produced in the same admonishing tone as 'Chotto anta'. The (re)production of this voice by YKI served to invoke some more specific matrix of relationship in her mind: her immediate addressee (NAO) and the person to whom she could or would like to apply the utterance, namely STM. Thus, we saw YKI approached NAO and addressed to her about her relationship with STM (06). Note that line 06 was a comment on her own relation with STM, not a direct address to STM. It would be almost impossible for a 5 years to explain her relation with others using expository words. This was more effectively achieved by quoting this voice 'anta'. When YKI made this comment to NAO, STM was present but was not addressed. Challenged by YKI's claim that she could address STM as 'anta' (implying that she could speak like an adult; or that she would gain a slight sense of superiority, etc.), NAO raised herself just as high. Now, YKI turned toward STM and utterred the expression to see its effect in real context (09). She repeated it and attempted to strengthen its effect by shaking the cylindrical shaft attched to the wall of the tower to produce noise, but STM would not look up. Seeing this, and perhaps remembering that she was not able to rebut more effectively, NAO laughed and made a mock on YKI's words by imitating them in a derisive accent (10). The boy's (re)production (06) was obviously motivated by YKI's (05), and was both an echo and a slight mock similar to NAO's last (re)production.

2. The Voice and the Face

When children assume other's voice for a specific effect, they are probably aware of the shift or the change in the 'speaking personality and speaking consciousness' (Holquist and Emerson, 1981, p. 434; Wertsch, 1991, p. 51). This is suggested in specific facial expression usually observable in concommitant with the (re)production of the voices as was observed in Episode 2 below.

Episode 2: Anta, yokuminasai. 95/06/05.
Participants: Two 5 year old girls, FYA and YOK.
Place: At a coner of a play room in the kindergarten affiliated to RCCCD.
All other children and adults except the observer had gone outside. FYA and YKO had been playing house, kneading plasticine to prepare a meal. HTM, a toddler, appeared and invited herself to the play. She did not say a word during the observation. YOK was looking for chopsticks to do cooking.

01 YOK: Are ohashi, oryorino ohashi ga nai. (Well, there are no chopsticks for preparing dishes here.)

Pointing to a nearby box, FYA made a suggestion.

02 FYA: Kono naka ni aru wa yo. (You find them in here.)

Leaning over the box, YKO saw the chopsticks and began to reach for them.

03 YKO: Ah. Hontoda. (You are right.)

FYA emphasized that she was right in saying that the chopsticks were inside the box. FYA looked up, making an exaggerated smiling face to YKO, she admonished her jockingly.

04 FYA: Kon naka jya nai no ka.(..) (Aren't they there.)
05 FYA: Anta yoku minasai. Chotto.(..) (Watch with more care, I say.)
06 FYA: YKO chan yoku mite yo. (YKO, watach more carefully, wouldn't you.)

Here again, we hear the expression, 'Anta,.... Chotto' (04). While FYA was playing the role of an older sister (as YKO was addressing her 'Onechan' throughout the observation), she did not want to offend YKO by this expression. The exaggerated smiling face was made to signal that it was a play (Bateson, 1972). It seems that children of this age are familiar with the psychological effects of many such voices. This awareness is evident in children's facial expression when they speak with other's voices.

3. The Apprenticeship in the (Re)production of other's Voices

In this episode we observe one child's insistence on the correct (re)production of others voices through repeated demonstrations and explanations.

Episode 3: Speak with true voice. 95/06/05.
This was observed some 15 minutes after Episode 3. The place and the participants were the same as that of Episode 3, except HTM, was a 21 months old

toddler, appeared during this episode. HTM invited herself to their play, trying to join YKO by imitating her putting plasticine clots into the plates YKO had prepared. By now, YKO had finished preparing. She had set three plates on the floor. She was filling the plates with plasticine balls.

01 YKO: Hai. San nin tsukutta wa. Kore ga watashi no. (There, for three. This one is mine.)

HTM came close to YKO and without saying anything she started to fill one of the plates with plasticine colts taken from another container near her. Seeing that one of the plates she was preparing now contained clots other than what she intended to be food, YKO picked out the clots and tried to stop HTM from continuing.

02 YKO: Dame dame. (No. No.)

Upon hearing this, FYA moved near YKO and HTM and squatted down. She tried to explain to HTM using a less harsh tone.

03 FYA: Kore wa dame nan da yo. (Not this one.)

However, HTM continued to grab the plasticine clots and placed them onto the plates. YKO tried to stop HTM from mixing the clots with her food.

04 YKO: Koko ni oicha dame da yo. Dame damee. Dame yo. Ii. (Don't put them here. No. No. Please, don't. Okay?)

Not satisfied with the tone of voice that YKO spoke to HTM, FYA demonstrated her ideal voice.

05 FYA: Soide iwanai de. Ano ne. Tojjya ikenai kara. Kore daiji na mono dakara, to itte, akachan ga wakaru to omo yo. (Don't say it that way. Well, because it is not acceptable to take. Because this is important. If you say so, baby will understand. I think.)

FYA and YKO suddenly reminded themselves that they had to get some items from the other side of the play room. So they left their kitchen and spent a few minutes away. Then FYA asked YKO to go back to their 'home' first. YKO ran a few steps home. As she arrived, she reported to HTM that she was home and apologized that she was late. She asked HTM to wait for the meal she was going to get ready.

06 YKO: Tada ima. HTMchan. Akak(.) HTMchan, tada ima. Osoku te gomen ne.(...) Chotto omachi na sai. Chotto matte te ne. (I am home, HTM. Bab(y), no, HTM, I am home. I am sorry I am late. Just wait. Please just wait a bit.)

Upon hearing this, after FYA returned and said she was home, she immediately corrected YKO's tone of voice.

07 FYA: Tada ima. Chotto machi na sai to ittara kawaiso dakara, chotto matte nee te itte. (I am home. It sounds harsh if you say 'Chotto machi na sai'. Say 'Chotto matte nee.')

08 YKO: Chotto matte nee.

At this time, HTM again was picking up one piece of plasticine clot from a different container. YKO tried to stop her from putting it to her plate.

09 YKO: Ah, damee. (Oh, no.)

FYA heard YKO's expression and was disturbed. The way she complained to YKO almost betrayed what she tried to preach. She demonstrated again.

10 FYA: Damee te ittara (dame). Dame da yo to iu no. (it is no good (dame) to say no good (dame). You should say, 'Dame da yo.')

YKO accepted the correction and said it again to HTM.

11 YKO: Dame da yo (..) ii. (Dame da yo. Okay?)

FYA was not satisfied with this. She demonstrated it again, adding that one should speak with true voice. When she demonstrated, she accentuated her model voice by nodding her head bending the and upper part of her body.

12 FYA: Son na jya dame. Dame da yo, ii, te. Honto no koe. (No, not like that. 'Dame da yo, ii'. Like this. With your true voice.)

13 YKO: Dame da yo, ii. (..) Kore kurai. (..) Onechan. ('Dame da yo, ii'. Like this. Sister?)

YKO was trying very hard. She said it, then she waited for FYA's judgement. But FYA did not seem to pay enough attention to this, for she was busying with her foodmaking.

14 FYA: Uh?

15 YKO: Dame da yo, ii. (..) de iu kanji. ('Dame da yo, ii'. Something like this?)

FYA eventually noded. She repeated that it should be utterred with tenderness.)

16 FYA: Un. Yasashiku ne. Yasashiiku. (Ya. With tenderness.)

HTM was watching the exchange as it went on. Now she made another attempt to grab the plasticine balls again. This invoked YKO's prohibition. No sooner had she uttered the prohibition, than she looked to FYA and modified her utterance. FYA rejected again. She demonstrated once more.

17 YKO: Dame damee. (..) Dame yo, ii.

18 FYA: Chigau chigau. Dame yo, ii. (No, no. 'Dame yo, ii'.)

Although it is not easy to pin down the exact meanings and the underlying motivation of each utterance made by the participants, it is neverthelss possible to make the following obvservations: (a) While adults speak with two other receivers in mind, the second and the third receiver, children speak in a world where the third receiver only begins to emerge. It seems that this third receiver, or what Bakhtin called superaddressee, begins to make its appearance when young children hear voices. In other words, when a young child begins to speak with two voices, his/her own and that of the others; (b) The quoting of other's voices to implement a particular intention of the speaker is immediately recognized as such by the listeners, and can invoke echoes; (c) These voices of the others eventually become the child's own voices when he/she is a full member of the language community; (d) Depending on the intentions of the

speakers, the same voices and their many echoes constitue a drama of multivoices.

INTERNALIZATION & IMITATION

The fact that the three episodes involved almost exclusively only girls is no accident. In agreement with the conclusions arrived at by studies in the peer culture (Corsaro, 1996) or in the development of gender identify (Gilligan, 1982), our observations concerning the imitation of other's voices suggest that this phenomenon is observed predominantly among girls. Boys that we observed tended to show imitation of physical activities, often with violence or aggression, with hardly any tendency to imitating adult's voices.

We do not know how the differential tendency begin in an earlier age in life and why. I suspect the sextyping that begins very early in life could create different sensitivities to different aspects of the world. For example, girls may be more interested in the different nuances in the auditory qualities of verbal expressions, or in the relational connotation in other's utterances, while boys are more interested in action related aspects of language. Tendencies like these are further strengthen by peer interactions which both encourage the participants' preferred mode of action as well as satisfy the common desire of the participants. Thus, girls like to play house, and the different roles they play encourage elaboration in the direction of imitating interaction in adult's social world.

These processes can be understood by using concepts such as internalization, appropriation, or imitation (Lawrence &Valsiner, 1993). In the ever changing context and relative relationship in an interaction, with some patterns repeatedly emerging, and some novel features appearing, a social affordance is perceived for the participants to feel that it is more appropriate to say one thing rather than another, in a certain tone of voice than in another. A certain adult voice is selected for its effect in a similar context and implemented. As no two contexts are exactly identical, this process always involves an element of risk that an individual has to be creative. It is in this way that the girls appropriate what attract them in their lives, i.e., other's, especially adult's voices, for example. Through (re) production or imitation of these voices, they take some aspects of the adult's voices, or of the relationships implied in these voices in particular, and integrate them into their own repertory, enlarging their understanding of human relationship and their capacity to interact within such relationship and context.

HYPOTHESES AND SPECULATIONS

In all three episodes presented above, what can be observed were the almost sudden emergence of the voices. However, a competent observer would have no difficulty in recognizing the voices as being quoted or borrowed from beyond the immediate context under observation. In other words, there is an invisible link between the observed context in which the voices were (re)produced and other social contexts in which the voices were heard or witnessed, whether the latter were 'real life' situation or enacted, virtual situation. There are individual differences in the social life of the children; some live in an environment where this particular genre of voices are relative-

ly frequently broadcast in the air and some live in a different environment. There are also individual differences in the sensitivity to these voices, as suggested by the differences between FYA and YKO in Episodes 2 and 3.

While the link with situations or contexts beyond the immediate time and space captured in the episodes is invisible and has to be inferred, the temporal and interpersonal (and intrapersonal) link of each utterance of the voice within one episode can be traced. For example, in Episode 1, YKI was observed to utter the voice 'anta' four times: the first utterance, 'Choto, anta' (05) was immediately after NAO's first utterance, 'Anta, shikkari shinasai' (04); her second utterance was embedded in her comment on her won usage of the word (06); her last two utterances, 'Chotto, anta, chotto' were directed to STM in repetition. NAO was observed to have utterred the word three times in this episode: the first was utterred to snap STM (04), the second utterance was a repetition of YKI's comment (07); the last utterance was also a repetition of YKI's attention getting usage, but in a mocking tone. The other utterance of this word was by a boy who was echoing to YKI's first utterance, perhaps also in a slightly mocking tone, in reaction to the usually dispproval overtone of the expression.

In Episode 2, FYA's utterance of the words 'Yoku minasai, anta, chotto' (05) was preceeded by the utterance 'Kon naka ni aru jya nai ka' (04), an utterance already framed in an admonishing tone. Furthermore, after having utterred the 'anta, chooto' (05) with an exaggerated smile, FYA finished with another utterance in the same admonishing tone, 'YKO chan yoku mite yo' (06), slightly apologetically. These winthin episode links seem to suggest the existence of particular images or gestures in the mind of the speakers and the audience corresponding to some specific 'speaking personality and speaking consciousness'. No doubt, these images or gestures invoke emotions, both of the audience and of the speaker, which have to be regulated.

In Episode 2, immediately after FYA pointed out to YKO that she could find the chopsticks in the box, FYA suddenly assumed an adult's voice (04). She added another utterance (05) in the same form of 'chotto, anta' as also appeared in Episode 1. The context and the intersubjectively felt relationship between FYA and YKO must have been percieved as social affordances for implementing these utterances. However, the anticipated effects of one's utterance is constantly monitored and, if necessary, regulated during the process of dialogue. FYA's exaggerated smile beaming at YKO suggests such a monitoring and regulation process. YKO did not say anything but she smiled a little as if to say that she understood FYA's metalinguistic message that she did not mean it seriously. This probably motivated FYA's further regulating the effect of her prior utterances by another one (06) in a begging and appeasing tone. What we observe here, I suggest, is a process of meaning making through negotiation and mutual adjustment in interaction. Once uttered, these voices probably created an effect which FYA felt was too strong if left alone. Now the context revealed a new affordance for FYA to apply a further assurance to round off whatever effect the prior utterances might have left. To FYA it must have been a challenge and a satisfying experience to be able to quote an adult's voice. It was also a lesson for her to actually expereience its effects on her partner and to regulate them by continuing the dialogue. Dialogue continues to be generated while the participants can see and experience the actual un-

folding of the meaning and its effects on all parties. Thus a dialogue is continuously mutually constructed by the participants during the whole process (Collins & Markovâ, 1995).

In Episodes 2 and 3, we see a rare case of the apprenticeship of the (re)production of others voices. It seems that FYA was such a child who was unusually sensitive to the very subtle change in tone of voice and its putative effect on others, especially on younger infants. She was observed to have insisted on teaching her playmate YKO to (re)produce the right tone of voice to the toddler HTM who did not complain or showed any negative signs of being affected by YKO's 'incorrect' voices. FYA's insistence on this particular genre of voice seems to reflect a value widely found in Japanese society in general; the emphasis on being considerate, being kind and tender to others, especially to the young. This episode also showed that YKO was so compliant to the instruction, a fact perhaps not unrelated to her role as a younger sister in their play. However, the fact that YKO did not get the voice right in spite of repeated trials, seems to suggest that the (re)production is not as easy as one might think. Further investigation will be necessary to find out what constitute the seemingly spontaneous (re)production observed in other occasions such as in Episode 1.

Undeniably, the episodes and the interpretations offerred in this paper contain subjective elements. There were many other episodes in my collection of children's daily life in our kindergarten; the recording of each episdoe was actualized as a result of numerous decisions made consciously as well as unconsciously. The episodes presented in this paper allow other interpretations. Fox example, YKI's utterance (07) could have been the result of YKI's attempt to clarify that she did not mean to offend NAO. Furthermore, just as the participants in this episode were probably not exactly sure of the meaning and intention of every utterance made by others, the author was and is doing his best in trying to understand the verbal interactions and their meanings. By analysing these episodes many times with other colleagues, the interpretation given above is one that a competant participant in similar situation would agree as acceptable.

The views I am trying to point out in this paper can be evaluated relatively independently, i.e., even when we allow a certian degree of uncertainty in the interpretation of these episodes. Indeed, one of the issues to be raised is the nature of children's interaction, or human interaction in general, for that matter. In daily interaction, it is not uncommon to find as many viewpoints as there are participants. Just as in ordinary casual conversation in general, one can hear more than one voice from a single utterance. It is never easy, indeed impossible, to pin down the precise meaning of an utterance. Especially in comparison with adults, the uncertainty of meaning and/or intention in the interaction of young children, who tend to lack the capacity and skills necessary for clarification and confirmation, looms even larger. Nor is it necessary for each participant to be absolutely sure of the precise meaning or intention of others for the interaction and the conversation to go on.

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INTERSUBJECTIVITY DURING BOTTLE FEEDING: HOW MOTHERS TALK TO THEIR PREMATURE INFANTS

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Abstract

The characteristics of maternal language and mother-infant interaction were examined with respect to how they may be attributed to, or influence, successful feeding performance for 17 mother-infant pairs during bottle feeding. Language analyses included syntactic, semantic, and complexity components of mothers' verbalizations directed to the infants as well as to others located within the perimeter of the feeding situation. The findings revealed that mothers in unsuccessful feeding episodes demonstrated a greater number of "mother focused" than "infant focused" utterances. Those maternal utterances directed toward the infants during unsuccessful feeding attempts also had a higher frequency of negative and command statements. During successful feeding episodes, mothers spoke more frequently and positively to their babies. Positive statements made by mothers in both groups were associated with ascribing infant agency (i.e., active participation). Mothers who displayed positive interaction characteristics had infants who demonstrated positive feeding outcomes (e.g., consumed more formula). Thus, some associations were found between maternal language characteristics and premature infant feeding performance.

Key Words: maternal language, premature infants, bottle feeding, intersubjectivity

INTRODUCTION

Caregiver-infant interaction can effect the oral feeding behavior of newborns (Ashland, 1995; Ashland & Wilcox, 1994; Meyer et al., 1994; Minde, Perrotta, & Hellman, 1988; Minde, Perrotta, Marton, Manning, & Hines, 1980), including maternal and infant contingent responsivity. Partner responsivity can include the degree of interest shown towards the other member of the dyad such as visual attending (Fish,

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Stifter, & Belsky, 1993) or reactivity to changes in stimulation provided by one of the partners (Eckerman, Oehler, Medvin, & Hannan, 1994). Signals such as visual attending and reactivity can indicate our motives to others and reflect our desire to communicate. The responding attention provided by the communicative partner, in turn, can affect one's form of communicative signals (Trevarthen, 1993; Trevarthen, & Marwick, 1986).

According to Trevarthen (1993), we are born with an ability to perceive interpersonal motives of others. Motive acts as a catalyst for both causing and regulating movement and modulates our ability to seek and interpret movements of communicative partners. For example, in relation to feeding, the degree of caregiver responsivity to infant signals can influence the infant's state of alertness and efficiency of a sucking pattern effecting the success of feeding. A successful feeding includes not only completing the feeding within an acceptable time frame but also providing a positive interaction resulting in a pleasurable feeding experience for both infant and mother (Ashland, 1995).

Caregivers and their newborn infants each instinctively seek and initiate communication with each other. This concept of mutual contribution to the communication process is supported by theoretical stances such as transactional theory (Sameroff & Chandler, 1975; Sameroff & Fiese, 1990), ecological theory (Bronfenbrenner, 1979), and intersubjectivity (Trevarthen, 1979; Murray & Trevarthen, 1985, 1986). Murray and Trevarthen (1985, 1986) describe the young infant as finely sensitive to the "form, timing, and direction of adult communication" and as a substantial contributor during interaction exchanges (1986, p. 15). For example, when the interaction was not pleasurable for either partner, Trevarthen and Murray reported that mothers and their infants showed distress when either partner did not receive contingent responses from the other during a double blind video interaction. Thus, not only are contingent responses important but each partner also seeks mutually pleasurable exchanges. Pleasure during an interaction exchange can be displayed in a variety of ways including facial expression, tone of voice, verbal content, or manner of touch and movement. Each partner will respond according to the degree of pleasure perceived in any given interaction. For infants, initial communication exchanges often occur during caregiving routines such as feeding episodes. Feeding schedules for newborns are generally every two to three hours, providing multiple opportunities for caregiver-infant interaction during feeding episodes, typically pleasurable.

However, since oral feeding is difficult for many premature infants (Minde, Perrotta, & Marton, 1985), there is potential for disrupting caregiver-infant interaction during feeding episodes (Ashland & Wilcox, 1994; Meyer et al., 1994; Minde, White, Brown, & Fitzhardinge, 1983; Minde *et al.*, 1985). Premature infants may present with increased gaze aversion, decreased responsiveness, compromised physical endurance, slower orienting to faces, and increased irritability and fussiness compared to healthy full term infants (Field, 1977; Sigman & Beckwith, 1980). In addition, feeding behaviors of premature infants may include decreased strength of suck, uncoordinated tongue movements, fluctuating sucking patterns, and difficulties coordinating respiration with swallowing (Case-Smith, Cooper, & Scala, 1989; Cowett, Lipsitt, Vohr, & Oh,

1978; Medoff-Cooper, 1991; Medoff-Cooper, Verklan,& Carlson, 1993; Medoff-Cooper, Weininger, & Zukowsky, 1989; Palmer, 1993). These aspects of premature infants' interactive and feeding behaviors have resulted in caregivers' use of less than optimal feeding techniques (e.g., frequent bottle manipulation, Ashland 1994, 1995) and inhibited caregivers' abilities to interpret infant behaviors during feeding attempts. For example, mothers of premature infants have been reported to demonstrate inappropriate initiation of interactions, to verbalize and smile less, and show fewer attempts at interacting with their infants (Minde *et al.*, 1985; Minde, Perrotta, & Hellman, 1988; Thoman, Turner, Hebert-Leiderman, & Barnett, 1970).

Important information can be gained from examining the contributions made by both adults and infants to the maintenance of a successful or positive interaction during oral feeding attempts. The degree to which caregivers are responsive to infant signals may influence both infants' state of alertness and efficiency of their sucking behavior, potentially impacting the success of a feeding episode (Fish *et al.*, 1993; Minde, Perrotta, Marton, & Manning, 1980). One aspect of maternal behavior, maternal language use, is one avenue for exploring maternal responsivity. The positive and negative aspects of maternal language and the degree to which their responses are contingent to infant behaviors may influence infant bottle feeding performance. In support of this notion, Meyer *et al.* (1994) found that mothers of premature infants who received intervention for providing developmental care for their infants responded less negatively and were more sensitive to infant behavior than the control group who did not receive the special training. The infants of the intervention group displayed marked decrease in difficult feeding behaviors than did those infants in the control group.

To date, maternal language has been minimally examined with respect to the potential influence on the oral feeding outcomes of at-risk infants. The examination of maternal language characteristics during feeding episodes may provide additional information for identifying the nature of positive and negative interactions that contribute to feeding performance outcomes. Murray (1993, 1996) found that maternal depression resulted in a higher incidence of negative interactions which, in turn, was found to be predictive of poorer infant cognitive outcomes. The language characteristics of depressed mothers was found to be similar to the language of mothers in unsuccessful feeding episodes (Ashland, 1995).

The purpose of this study was to further examine the effects of maternal language characteristics and mother-infant interaction on successful bottle feeding abilities of premature infants. Specifically, to study potential relationships between maternal length of utterance and infant feeding performance, differences in maternal syntax characteristics and positive and negative feeding performance, and maternal interaction, affect, and referencing influences on feeding outcomes. Developmentally, the social experiences that occur during feeding time between caregivers and infants may be critical for social integration and communication development (Paul, Dittrichova, & Papousek, 1996).

METHODS

Participants

The participants were 17 mother-infant pairs selected from an archival data base of 32 mother-infant pairs videotaped during the transition from gavage to initial bottle feeding sessions in Neonatal Intensive Care Unit (NICU) settings (Ashland & Wilcox, 1993). The infants were recruited from a level II and a level III NICU in Phoenix, Arizona, USA. All infants were gavage fed when they entered the study and had no prior oral feeding experience. The gestational age range of the infants was 26-35 weeks with a mean of 29 weeks. The birth weight range was 900-2268 grams, M=1495 grams. The average infant medical severity rating was moderate (Neonatal Medical Index, Korner *et al.*, 1994). A moderate severity rating included assisted ventilation for 3-14 days; and/or birth weight less than 1000 grams, Grade I or II IVH, apnea or bradycardia requiring medication, patient ductus requiring medication, or hyperbilirubinemia requiring a transfusion. The ethnic backgrounds of the participants included 12 Caucasian, three Hispanic, one Native American, and one African American. The age range of the mothers was 17-32 years, mean age was 22 years. Other participants in this study included a staff speech-language pathologist, a staff occupational therapist, and two developmental nurse specialists. Infants with oropharyngeal anatomical anomalies that interfered with the feeding process (e.g., cleft palate, choanal atresia) were excluded from participation.

The 17 infant participants were selected based on degree of medical risk and bottle feeding performance. Specifically, infants who presented with moderate medical risk and whose feeding performance could be described as clearly successful or unsuccessful based on quantifiable behaviors (e.g., amount of formula intake, time for consumption, frequency of maternal bottle manipulation). The infants were then grouped by successful or unsuccessful feeding performance using an objective check list by the investigator and two independent observers (developmental nurse specialists). Criteria for successful feeding performance included: three or more positive quantitative indicators (e.g., consumes entire bottle, coordinated suck-swallow, low frequency of maternal bottle manipulation). Criteria for unsuccessful feeding performance included: three or more negative quantitative indicators (e.g., increased time to complete feeding, uncoordinated suck-swallow, lethargy or poor endurance, high frequency of maternal bottle manipulation). The successful group included seven infants, all males, with a mean gestational age of 31 weeks (range: 25-35 weeks), and a mean birth weight of 1494 grams (range: 1110-2070 grams). The unsuccessful feeding group included ten infants, four females and six males, with a mean gestational age of 30 weeks (range: 26-35 weeks), and a mean birth weight of 1550 grams (range: 900-2268 grams).

Procedures

Three videotaped observations from this archival video data base are available for each infant including a neurobehavioral screening examination, a bottle feeding attempt by each infant's nurse, and a subsequent bottle feeding attempt by each infant's mother. All three observations were obtained within a one-week period. The neurobehavioral screening was conducted 24-48 hours before the first bottle feeding attempt.

Then, 2-3 days after the first bottle feeding attempt, the nurse was videotaped feeding the baby, and 24-48 hours later the mother was taped bottle feeding the baby. All the infants were initially gavage fed and had no oral feeding experience prior to the initial videotaped observation. For the purpose of this investigation, only the mother-infant bottle feeding observations were examined.

Descriptive microanalyses were conducted of mother and infant behaviors during each entire observed bottle feeding episode. Detailed transcriptions were made of the sequence of infant and maternal behaviors using a time reference code from the video in minutes and seconds. Adult behaviors included seven types: (a) interactive (e.g., smiling, singing), (b) visual regard - toward or away from the infant, (c) touch, (d) verbalizations - directed to and away from the infant, (e) modification of the environment (e.g., alter lighting or noise), (f) movement (e.g., rocking), and (g) bottle manipulation (e.g., twist, jiggle). Infant behaviors that were noted included: (a) visual regard - focus toward or away from caregiver, (b) touch, (c) vocalizations (e.g., grunting, crying, sighing), (d) states of alertness (e.g., drowsy, low level alert), (e) movement (e.g., flexing, head turning), (f) distress (e.g., choke, finger splay, rapid respiration), and (g) feeding behaviors (e.g., sucking, spitting up). Maternal language behaviors were then coded utilizing a rating scale adapted from the *Global Ratings for Mother-Infant Interactions at Two and Four Months* (Fiori-Cowley, & Murray, 1995) and analyzed with respect to potential relationships to infant feeding outcomes. The coding of maternal language behaviors was conducted by a graduate research assistant who was "blind" to the grouping factors of successful or unsuccessful infant feeding performance.

Reliability

The graduate research assistant in this project participated in approximately 20 hours of training with the adapted language coding system until .80 inter-and intrajudge reliability was consistently demonstrated over three consecutive coded segments of five minutes each. Point by point comparisons were made with the original coding and percentages of agreement were obtained. If a minimum of 80% of agreement was not obtained on a particular measure that segment was recoded by consensus and another five-minute segment was randomly selected for independent review. This process was repeated until at least 80% agreement was achieved. After completion of the maternal language coding, ten percent of the data, or two five-minute segments, for each infant was randomly selected from the beginning, middle, and end of a maternal feeding session for analysis by a second individual trained in the coding procedures used in this investigation. The independent analysis included identification of maternal language characteristics: complexity, syntax, interaction focus, affect, and agency. Interjudge reliability across the maternal language categories ranged from .81 to .99, $M = .85$. Intrajudge reliability ranged from .86 to .98, $M = .92$.

Data Coding and Analysis

Coding of the language characteristics of maternal utterances involved documenting utterance complexity; syntax; and characteristics of interaction, affect, and refer-

encing. Guidelines for this coding were adapted from Fiori-Cowley and Murray (1995). Complexity coding consisted of documenting length of utterance, repetitions of utterances (exact and not exact), and same topic utterances (for two consecutive utterances). Aspects of syntax that were coded included: interrogatives, imperatives, declaratives, and greetings. The coding of interaction characteristics involved indicating the focus of each maternal utterance whether the focus was the infant, the mother, or another person. Specific interaction codes included: (a) *infant* focused - focus of comment is the infant (e.g., "you are hungry"), (b) *infant* focused expansions - expanding on an infant behavior (e.g., child starts sucking; "my look how you are sucking"), (c) *mother* focused - comments about mother or mother's agenda (e.g., "come on", "hurry up", "will you give me a smile"), (d) *other* focused - comment to another person, (e) *other* focused infant - comments to another person about the infant. Coding maternal affect included documenting comments that were positive (e.g., praise, empathy, encouragement), negative (e.g., corrections, criticisms), and neutral. The final coding category was referencing infant agency-presence or absence. Utterances coded for presence of agency required making direct reference to the infant and indicating whether the infant was an active participant capable of action (e.g., "you are trying to move your arms"; "you are sucking so good"). Non-agency codes applied to maternal utterances that referenced the child but that did not ascribe agency or action to the child (e.g., "you are so beautiful"). All utterances were coded for length, syntax, interaction, and affect. However, utterance repetition and agency referencing did not occur in every utterance and thus were only coded as they occurred.

The number of occurrences for items within each language category (e.g., complexity, syntax) were then tallied and percentages were calculated based on the total number of utterances. For example, in the syntax category, percentages were calculated that demonstrated what percentage of the total utterances were interrogatives, imperatives, declaratives, and greetings. A series of independent T tests were used to examine potential differences within each of the maternal language categories. In addition, a Pearson Product Moment Correlation was used to explore possible relationships between the language categories (e.g., agency and maternal affect).

RESULTS

A series of statistical analyses were performed with regard to two grouping factors: successful and unsuccessful infant feeding performance. The dependent measures included complexity of maternal utterance; syntax of maternal utterance; and characteristics of maternal interaction, affect, and referencing.

Complexity

Both groups of mothers in the successful and unsuccessful feeding episodes used similar sentence lengths (MLU range: 3.3 to 3.7). Sample maternal responses included: "there you go", "come on", "get your tongue down", "are you sucking?" This finding corresponded to observations in the literature that caregivers reduce and simplify their sentence structures when interacting with young children. Also, both groups of mothers displayed low use of repeated and same topic utterances with a mean of less

than one percent. The frequency of comments made by mothers to their infants was slightly higher in the successful group (5.6 comments per minute, R=2.2 to 9.9) compared to mothers in the unsuccessful group (3.2 comments per minute, R=0.94 to 6.7). However, the differences were not significant. The similarities found in maternal language complexity across both feeding groups did not support the hypothesis that language complexity would be related to infant feeding behaviors. For example, that mothers in successful feeding episodes would use longer sentences or speak more frequently to their infant than mothers in unsuccessful feeding episodes.

Syntax

An analysis of maternal syntax patterns revealed similarities as well as differences between mothers in the successful and unsuccessful feeding groups. Comparisons made across the four categories of syntax codes (interrogatives, imperatives, declaratives, and greetings) revealed that statements were used most frequently by both groups of mothers than the other three types of syntax. This was not an unexpected finding in view of infants' primary mode of communication being nonverbal. In addition, of those utterances directed toward the infants, a trend in the data showed that the mothers in the unsuccessful feeding group used more commands than mothers in the successful group (see Table 1).

Table 1 Maternal Syntax and Feeding Performance

Feeding Performance	Commands %	Statements %	Questions %	Greetings %
Successful Group	.14	.64	.15	.13
Unsuccessful Group	.28	.54	.14	.04

Sample command statements, such as "come on" and "hurry up" were frequently used when the infants stopped sucking or were sucking less frequently. Such verbal prompts did not generally result in the initiation of infant sucking behaviors. In comparison, responses by mothers in the successful group were characterized by encouragement and empathetic statements when infant feeding difficulties were displayed (e.g., "are you tired", "you can do it"). Maternal affect paired with command statements was coded as negative.

Interaction Focus

It was hypothesized that mothers in the unsuccessful feeding group would talk less to their babies than mothers in the successful feeding group. However, an analysis of the findings showed that both groups of mothers used statements directed toward their infants; 50% and 34% respectively for the successful and unsuccessful feeding groups. Although both groups of mothers talked equally to their infants, a trend in the data revealed that mothers in the negative feeding outcome group used greater numbers of comments that focused on themselves (41%) compared to the mothers in the positive group (24%), ($T=-2.09$, $p=.059$). That is, the mothers in the unsuccessful feeding group frequently made statements based on their needs even though they were

speaking to their babies. For example, " let's go ", " you need to hurry up and finish " were statements that were directed toward the baby but reflected the mother's desire for the baby to finish his or her bottle. In comparison, statements made by mothers in the successful group showed a focus on the infant (e.g., " oh, are you okay ? ", " you are hungry ", " what's the matter ? ", " you can do it "). Infrequent statements were made that expanded on a babies behavior (<1%) or that were directed to someone other than the baby (<2%).

Affect

Both groups of mothers spoke positively about their babies, ranging from 21% to 32% of all statements directed toward the infants. However, a trend in the data revealed that mothers in the negative feeding outcomes group used greater numbers of criticisms and negative comments (36%) than mothers in the positive feeding group (18%), ($T = -1.89$, $p = .077$). The following sample of two maternal-infant interactions reflects aspects of positive and negative maternal affect :

Positive Interaction	*Negative Interaction*
M : " yes my love it's time to eat ", " this is delicious " (smiles)	I : makes fussy noises
I : no response, eyes closed	M : " oh " (prolonged) and puts nipple in baby's mouth
M : " how delicious is the food my love	I : poor lip seal on nipple then grimaces
I : no sucking, opens eyes	M : partially removes bottle, " what a face"
M : " I like it, I like it my love "	M : puts nipple back in, twists bottle " it's the same stuff you just ate "
	I : continues to grimace

The positive interaction scenario from a successful feeding episode demonstrated a positive maternal language style and also contingent maternal responses to infant behaviors. While the negative interaction scenario from an unsuccessful feeding episode reflected negative maternal comments and non-contingent maternal responses to infant behavior. The latter pattern of maternal interaction interferred with the infant's feeding performance.

Referencing Agency

Both groups of mothers used infrequent statements that ascribed agency to the infants (8-11%) and non-agency (3-9%). This was not surprising given the general minimal activity demonstrated by newborn premature infants during oral feeding episodes. However, interestingly the agency statements made by both groups were highly correlated with positive statements ($r = .91$, successful group ; $r = .81$, unsuccessful group). That is, when the mothers viewed the baby as an active participant in the feeding interaction process, their statements reflected that the baby was making a positive contribution to the feeding outcome (e.g., " you are sucking so good ", " look how well you are eating ", " you are keeping your eyes open more "). It was expected that there might be a relationship between mothers in the unsuccessful feeding group view-

ing the infants as active participants (agency) and their use of commands and expression of negative affect. An illustration of agency paired with negative affect was when a mother in the unsuccessful feeding group responded: " what's the matter, you just ate that a minute ago ". However, the correlations between agency and commands ($r = .40$) and between agency and negative affect ($r = .34$) were low for the mothers in the unsuccessful feeding group.

SUMMARY AND DISCUSSION

In summary, mothers in the negative feeding group directed more utterances toward themselves than the mothers in the positive feeding group. This may be an indicator that the focus for these mothers was to meet their needs or that they were having difficulty relating to the infant's abilities or needs. This finding coincided with maternal language styles of depressed mothers interacting with their infants using frequently mother-focused statements (Murray, 1993, 1996). In addition, the typical style of maternal interaction for both groups was for mothers to make comments to their babies versus stating commands and posing questions. This was not an unexpected finding given a newborn infant's level of communication development. However, the trend of using more commands and expressing criticisms by mothers in the unsuccessful group compared to the mothers in the successful feeding group coincided with poorer feeding performance exhibited by infants in the unsuccessful group. Similar findings were reported by Minde *et al.*, 1985 and Meyer *et al.* 1994 when mothers whose infants had difficulty feeding frequently displayed negative affect toward their infants. The mothers' responses in this study to less than optimal infant feeding behavior was to frequently make negative verbal prompts for the babies to suck or finish their bottle, or to manipulate the bottle to elicit a sucking response. Such patterns of maternal behavior were paired with unsuccessful feeding outcomes. Finally, with regard to agency, although mothers in both groups infrequently described their infants as actively contributing to the feeding process, when they did do so it was in a positive light. This may be reflective of Trevarthen's notion of intersubjectivity, that we are motivated to seek pleasurable interactions (Trevarthen, 1993).

In conclusion, infants in the successful group responded positively to maternal style of interaction, including the mothers' style of language expression. These infants consumed formula more efficiently and demonstrated fewer signs of distress compared to infants in the unsuccessful feeding group. Thus, some associations were demonstrated between maternal language characteristics and premature infant feeding performance.

Clinical Applications

Potential clinical applications of these findings may include consideration of maternal language variables. Such maternal language characteristics may provide an indicator of a negative mother-infant interaction as they affect infant feeding outcomes. Also, mothers who express higher numbers of commands and criticisms may have a negative influence on infant feeding outcomes. Conversely, mothers who display positive interaction characteristics may influence positive feeding outcomes. Additionally,

mothers who display negative interaction characteristics may also benefit from assistance that may potentially improve feeding performance and overall development of at-risk infants.

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AN INQUIRY INTO YOUNG CHILDREN'S DEVELOPMENT OF SELF THROUGH EMOTIONAL COMMUNICATION WITH THEIR FAMILY MEMBERS

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INTRODUCTION

Infants acquire an increasingly sophisticated sense of self awareness within social contexts. As many researchers have pointed out, there is a qualitative alteration in 2-year-olds' consciousness of themselves and others as "selves". Two-year-olds manifest self awareness by using personal pronouns and they can recall something about prior experiences when asked. Hobson (1993) stressed that the terrible two's understanding of others vis-à-vis his- or herself emcompasses the fact that people are sources of opposition and competition as well as co-operation.

Trevarthen (1993) made several important statements on communicative regulation of self-other relation. He said that human emotions are elaborated by learning, especially socio-cultural intersubjective learning. Dunn (1983, 1988, 1993) studied children within their families to show how children come to understand the social rules of the family and the feelings, intentions and relationships of others.

The focus of this study is on how emotional experiences through family relationships contribute to the development of Japanese 2-year-old children's sense of self and to their understanding of others.

Each family has its own emotional climate and harmonious or conflicting interactions. The dining table is an appropriate setting to reflect the natural interactions between the 2-year-old and his/her family members. These daily family exchanges at a dining table were investigated first. And second, their understanding of self and others' mind was examined by employing a kind of narrative approaches.

METHOD

Subjects

The subjects were 10 families who are part of a longitudinal study of playful teasing from early infancy (Nakano,1997). At 18 and 24 months of infants' age, they participated in this research of children's emotional communication and their self awareness. Six (4 girls and 2 boys) were first-born and had no siblings. Four (2 girls and

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2 boys) were second, third or fourth-born and had one, two or three siblings. The mothers' average age was 31.5, and the fathers' was 33.2. All were nuclear families living in a big city of northern Japan.

Procedure

Family Interaction at Dining Table

At 18 months of age, the mothers were asked to video-tape their family exchanges at the dining table when all family members were present. As they were already skilled at manipulating 8mm video cameras, they set the cameras at appropriate angles in order to facilitate the video recording.

The video tapes of the 18 month olds at the dining table were edited to focus primarily on the children's emotional expressions. The edited tapes were 5.6 minutes long on the average. Each tape included conflicting, harmonious, and normal exchanges among the family members.

Semi-Structured Experiment of Children's Self Awareness

A kind of perturbation was employed in order to analyze a 2-year-old's self awareness. The reactions to non-contingent (earlier-recorded) images on video tapes were investigated. At 24 months the mothers were instructed to watch the edited tapes of the 18-month olds at the dining table with their children and other family members, and videotape the children's reactions focusing on their facial expressions.

Coding

Family conversations and emotional expressions in the tapes of the 18-month olds were transcribed in time sequence. While reconciling 24-month children's reactions with the images of 18-month videotapes, 24-month tapes were transcribed. After transcription, two-year-olds' verbal expressions to the images of themselves or to those of others were classified into three types. When children uttered their own names or "I" in response to their own images spontaneously, or when asked about these images, the behavior was classified as Type1 (Self). Pointing to the images of themselves was also included in this Type1 (Self). When children uttered "papa", "mama" or a sibling's name in response to the images of others spontaneously, or when asked, such behavior was classified as Type2 (Other). Pointing to the images of others was also included in this Type2 (Other). No verbal refernce to the images on the tapes was coded as Type3 (No Reference). In each type there were positive and mixed emotional expressions. No clear negative emotions were observed. Smiling, laughing and cheerful tones of voice were classified as positive emotional expressions. Neither positive nor clearly negative expressions such as a wry smile, a serious face, a suspicious look, or finger sucking were defined as mixed emotion.

RESULTS

Self Awareness and Understanding Others

Nine out of ten children showed Type1 (Self) reaction. Three expressed self awareness in language spontaneously. One child from a large family employed the

pronoun "I". When the 2-year-old children referred themselves, they showed more shyness or embarrassment than referring to others.

Eight children showed Type2 (Other) reaction. Six used the words such as "papa" or "mama" while smiling. They recognized their parents or siblings delightfully or with interest. They often turned to look at their family pointing to the harmonious images of the video as if they wanted to share joy with them.

Concerning Type3 (No Reference), all of the children expressed mixed emotion. They exhibited serious, tense looks, leaning forward postures, or restless finger sucking frequently, and yet they did not avert their gaze at all while watching the video. The video images of themselves, especially the scenes with conflicting episodes, held their curiosity and kept them in suspense.

Family Exchanges and Self Consciousness

Figure1-(b) indicates Type1 (Self). While intently watching the scene of the video (Figure1-a), she suddenly comprehends herself (A). In the video she dropped her cup with a rattling sound, and she looked her mother in the face. After calling her own name with a self conscious smile (B and C), her face became serious (D). Even though her parents were amused at the scene, she was never moved to laughter.

Figure2-(a) depicts a conflicting episode in which the child was upset with himself and his clumsiness in manipulating chopsticks. Figure2-(b) indicates Type1(Self). He leaned forward (A), smiled a wry smile (B), mimicked his own crying face (C), and gave a suspicious look (D). He was amused at his awkwardness when his mother referred to this.

Figure3-(b) indicates Type3 (No Refernce). Figure3-(a) depicts a conflicting scene where the child failed to give the food on her spoon to her father. Her father responded negatively to her failure. She watched intently while restlessly finger sucking. Her behavior showed embarrassment or shame.

Figures4-(b) and 5-(b) indicate Type2 (Other). Their joyful reactions to the images of their families showed remembered private conceptual others.

DISCUSSION

Why do the 2-year-olds frequently express mixed emotions when they watch the images of themselves, and yet show more positive emotions in response to the images of their family members? Neisser(1993) mentioned that even the most talkative young children live chiefly in the present, with little to say about the past or the future. They do not think of themselves as having life narratives. But the result of this study suggests that even 2-year-old do express how they think of themselves nonverbally. The emotional expressions seen in Figures1-(b), 2-(b), 3-(b), 4-(b) and 5-(b) are very interesting, because they represent the 2-year-olds' self evaluation of how they contributed to the ongoing interactions within the family context. They eagerly tried to read or understand the meaning of their behavior in the emotional communication with their family members.

Reddy *et al.* (1997) investigated infants' sensitivity to the feelings and communicative attentiveness of their parents. They pointed out that the infants are displaying

Figure 1-(a) A conflicting scene from a dining table. The girl (18 months old) dropped her cup with a rattling sound, and she looked her mother in the face.

Figure 1-(b) The girl (2 years old) showed Type1 (Self) behavior.
While intently watching the scene of the video (Figure1 a), she suddenly comprehends herself (A). After calling her own name with a self conscious smile (B and C), her face became serious (D).

Figure 2-(a) A conflicting scene from a dining table. The boy (18 months old) was upset with himself and his clumsiness in manipulating chopsticks.

Figure 2-(b) The boy (2 years old) showed Type1 (Self) behavior. He leaned forward (A), smiled a wry smile (B), mimicked his own crying face (C), and gave a suspicious look (D).

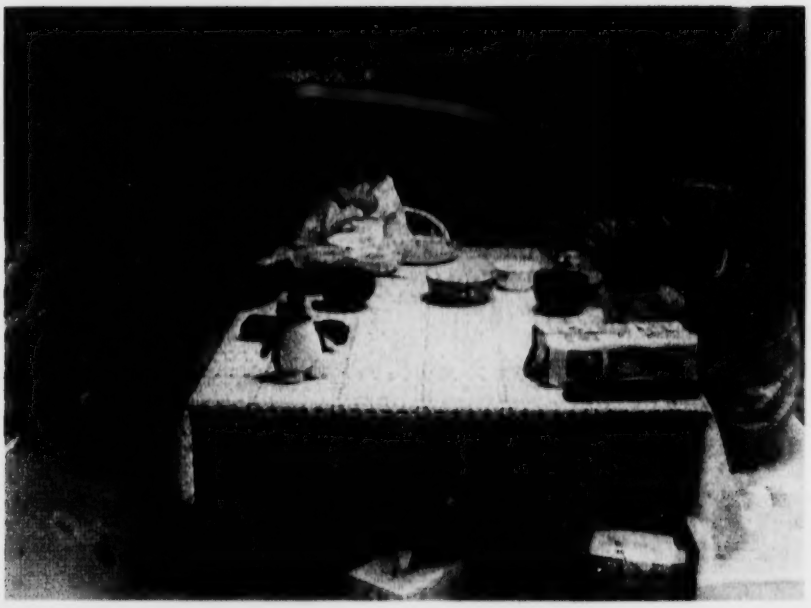

Figure 3-(a) A conflicting scene from a dining table. The girl (18 months old) failed to give the food on the spoon to her father. Her father responded negatively.

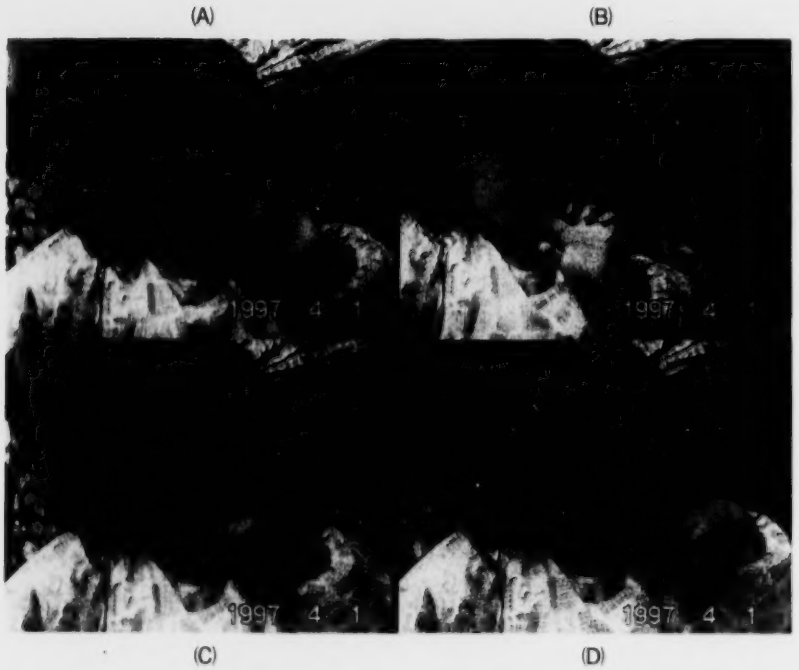

Figure 3-(b) The girl (2 years old) showed Type3 (No Reference) behavior. She watched intently while restlessly finger sucking. Her behavior showed embarrassment or shame (A, B, C, and D)

Figure 4-(a) A normal scene where the family members started to eat.

Figure 4-(b) The girl jumped with joy and spontaneously said, "Ah! There is mama and papa."

Figure 5-(a) A normal scene where the mother asked her daughter what she wanted to eat.

Figure 5-(b) The girl was delighted to see the scene (Figure 5-a), and she spontaneously uttered "mama" in response to the images of her mother.

special motives for learning how to share experiences of the world with other persons through their sensitivity. Reddy also argued infants' sensitivity to laughter and directing others' attention to acts by self. It may be helpful to discuss the results from their viewpoint. When the scene was a harmonious one, they could tune in the images of the videotape. They shared the joy with other family members while watching the harmonious scenes together. When the scene was a conflicting one, they exhibited suspicious looks frequently as if they keenly tried to understand the meaning of the replayed emotional communication for themselves. Although they socially referred to their parents or siblings, they were never influenced by others' appreciation of the scene. Nonverbal behavior like this may be regarded as the manifestation of reflective self consciousness.

In some recent research (Bråten,1988,1996; Nakano,1997), much attention was given theoretically to intersubjectivity. Further investigation is needed in order to clarify how children's intersubjective experiences through family relationships contribute to their development of self. Methodologically narrative approaches may be very helpful for my future research.

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THE RELATION BETWEEN EMOTIONALITY AND EMPATHY-RELATED RESPONSES IN JAPANESE YOUNG CHILDREN

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Abstract

The relation between emotionality assessed by laboratory observation in infancy and empathy-related responses at 3 years was examined. Each emotionality of Fear, Anger, and Pleasure were assessed at 2 years earlier. Empathy-related responses were assessed with three measures: facial and verbal reactions to distress situation (sympathy and personal distress); prosocial response to doll play; maternal reports of dispositional empathy. The results were as follows: (1) tendency to experience fear predicted later sympathetic behavior; (2) anger emotionality was positively related to personal distress; (3) positive emotionality predicted later sympathetic behavior. These results were discussed in terms of children's regulation of emotion and behavior.

Key Words: emotionality, empathy-related response, laboratory observation

INTRODUCTION

In recent years there has been a renewal of interest in children's characteristics of emotion and its role in social behavior. Many attempts have been made to examine the contribution of emotionality to social behavior (Eisenberg, Fabes, Shepard, Murphy, Guthrie, Jones, Friedman, Poulin, & Maszk, 1997; Eisenberg, Fabes, Murphy, Maszk, Smith, & Karbon, 1995; Rothbart, Ahadi, & Hershey, 1994), behavior problem (Caspi, Henry, McGee, Moffitt, & Silva, 1995; Eisenberg, Fabes, Guthrie, Murphy, Maszk, Holmgren, & Suh, 1996), conscience (Kochanska, 1995; Kochanska, 1997) and social skill (Eisenberg, Fabes, Bernzweig, Karbon, Poulin, & Hanish, 1993).

Empathy is often defined as an emotional response resulting from the recognition of another's emotional state or condition (Eisenberg, Fabes, Murphy, Karbon, Smith, & Maszk, 1996). Eisenberg and Fabes (1990) have differentiated between two vicariously induced emotional reactions, based on Batson's theory (1987). One of the

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reactions is sympathy, defined as an other-oriented emotional reaction (such as concern), and the other is personal distress, defined as a self-oriented emotional reaction (such as discomfort). Those prone to sympathy has a tendency to assist the others who are in distress, whereas children prone to personal distress tend to avoid dealing with the distressing situation (Eisenberg & Fabes, 1990). Despite the conceptual and practical importance of empathy, little is known about the correlates of empathy, particularly of children (Eisenberg & Mussen, 1989). However, in the last decade, with the increasing recognition of the role of emotion in social functioning, it has been argued that individual differences in emotionality affects vicarious emotional responding (Eisenberg, Fabes, Karbon, Murphy, Wosinski, Polazzi, Carlo, & Juhnke, 1996; Eisenberg, Fabes, Murphy, *et. al.*, 1996; Rothbart, *et. al.*, 1994). The purpose of this study is to examine the relationship between emotionality and empathy-related responses.

In considering how emotionality can have influence upon empathy-related responses, the model suggested by Kochanska (1993) is helpful. She proposed that the way in which temperament affected the development of conscience could be divided into two types. We think this model can be applied to the relation of emotionality and other social development including empathy-related behavior. First, emotionality may influence empathy-related responses in a relatively straightforward manner (the main effects). In this respect, Eisenberg and Fabes (1992) advanced a heuristic model in which individual differences in both emotionality and regulatory capacities were associated with the quality of social functioning. In this model, the relative tendency to show either sympathy or personal distress is correlated with individual differences in the tendency to experience either positive or negative emotions. Next, emotionality may moderate the impact of socialization (the interaction effects). The construct of "organismic specificity" (Wachs & Gandour, 1983) is a good example of this type of effects. In this paper, we focus on the main effects of emotionality, and the interaction effects will not be dealt with here.

Eisenberg seems to be one of the first researchers who give much attention to the role of children's own characteristics in their tendency towards empathy. She and her colleagues have explored this problem in a series of studies and have obtained the following results: (1) Adult's reports of children's sympathy, and children's self-reported sympathy were associated with adult's reports of their children's positive emotionality; (2) adult's reports of children's sympathy, and children's self-reported sympathy were associated with adult's reports of children's low negative emotionality; (3) peer nominations for dispositional prosocial behavior were negatively related to adult's reports of their children's negative emotionality; (4) boy's self report of sympathy was related to lower heart rate and lower skin conductance (i.e., more prone to negative emotionality) (Eisenberg, Fabes, Karbon, *et. al.*, 1996; Eisenberg, Fabes, Murphy, *et. al.*, 1996). The association between empathy-related responses and positive emotionality is consistent in adult subjects (Eisenberg, Fabes, Murphy, Karbon, Maszk, Smith, O'Boyle, & Suh, 1994), in children by other researcher (Denham, 1986). Yet, with regard to negative emotionality, it was found to have positive relation to adults' sympathy (Eisenberg, *et. al.*, 1994) but negative relation in children (Eisenberg, Fabes, Karbon, *et. al.*, 1996; Eisenberg, Fabes, Murphy, *et. al.*, 1996). Lack of information

with regard to the contribution of children's emotion to their empathy-related responses calls for further study.

Among the many issues that await investigation, the first point to be discussed in this paper is whether uniformity in emotionality exists across different emotions. Earlier theorists assumed the existence of a uniformity across different emotions (e.g., Thomas & Chess, 1980). However, resent research questioned this uniformity (e.g., Goldsmith & Campos, 1990; Hoshi, Kusanagi, & Chen, 1997). For example, we examined the relations among tendencies in the expressions of fear, anger, and pleasure in fifty infants and the result suggested that different emotions had different expressional tendencies (Hoshi, *et. al.*, 1997). Especially, we want to emphasize the differences between the tendencies of anger and fear. These two emotions are typical negative emotions and many researchers have treated them within the same category and so did Eisenberg and her colleagues (e.g., Eisenberg, Fabes, Murphy, *et. al.*, 1996). This position was shared by Rothbart, Ahadi, & Hershey (1994) who examined the relation of temperament and social behavior in childhood and concluded that it was necessary to abandon a global temperament model and to analyze the components of negative emotionality (such as anger and fear) and their possible role in social behavior separately. We argue that when we deal with the effects of emotionality, it is necessary to distinguish these two negative emotional tendencies.

A second point to be considered concerns the methods used in measuring emotionality. Three methods are currently been used in the measurement of emotionality: questionnaire, laboratory observation and home observation. In terms of the number of studies the most popular form of emotionality assessment is the parental report questionnaire. In Eisenberg's research, almost all measures of emotionality were from adult reports (either parents or teachers). However, in a series of reviews of studies using questionnaire, this method has been repeatedly criticized for theoretical and psychometric inadequacies (e.g., Rothbart & Mauro, 1990). No investigation using observational measurement has been carried out concerning the relation between the emotionality and dispositional empathy, with the only exception of Rothbart *et. al.* (1994). The present study is a first attempt in using observational assessment for investigating this issue.

Furthermore, the issue of whether later empathy-related reactions can be predicted by emotionality will be dealt with in this paper. Emotionality is considered one of the most important dimensions of temperament (e.g., Goldsmith & Campos, 1982). It has been proposed in many studies that emotionality has a high developmental stability over the first years of life. Nevertheless, little is known about the predictability of later vicarious emotional responding from earlier emotionality. In particular, surprisingly few studies have addressed the issue of the contribution of early emotionality to later social development. This study proposes to do just this.

The last point to be raised concerns the method of empathy assessment. The most commonly used method for assessing empathy in children has been picture/story procedures. Eisenberg and Miller (1987) reexamined the literature and argued that it was not an appropriate method for assessing empathy. In recent years, the following methods have been introduced: measures of facial expressions or verbal reactions to

viewing a person in distress; physiological measures (such as heart rate, skin conductance, and vagal tone); and children's reaction to a set of story stems using doll play. While the methods vary among researchers, the question of how best to assess children's empathy is still an open one.

To sum up, in this paper we examine the relation between each emotionality of fear, anger and pleasure which were assessed by laboratory observations in infancy, and the children's empathy-related responses at 3 years. For empathy-related reactions, we used three measures: (1) facial and verbal reactions to distressed person and films; (2) children's prosocial response to the story stems using dolls (enacted doll procedure); and (3) maternal reports of children's dispositional empathy.

METHOD

Overview

The data come from a longitudinal project on emotional development. Children and mothers were assessed on two laboratory sessions, lasting 2 hours each. Children and mothers were observed in the laboratory over several episodes. The entire session was videotaped from behind a one-way mirror. Behavioral data were coded from the videotapes.

Sample

Time 1. Fifty pairs of mothers and their children (23 boys and 27 girls) visited our laboratory. The children's age ranged from 19 to 20 months and their average age was 19.2 months and their average birth weight was 3129g. All children were free of serious birth complications and congenital anomalies.

Time 2. About two years after the first observation, 30 children (16 boys and 14 girls) attended the second laboratory observation sessions. The children's age ranged from 41 to 45 months and their average age was 42.7 months. Among them, 17 children (10 boys and 7 girls) had participated in the time 1 assessment. About 6 months later, 25 mothers (13 boys and 12 girls) completed a conscience questionnaire and their children's age ranged from 49 to 52 months and their average age was 50.4 months. Among the 25 children, 14 (8 boys and 6 girls) had participated in time 1 assessment.

Measures of emotionality (Time 1)

Laboratory Temperament Assessment Battery (LAB-TAB)

For laboratory assessment, we used LAB-TAB. The locomotor version of LAB-TAB was designed by Goldsmith and Rothbart (1992) to make available a standardized instrument for laboratory assessment of temperament for 12-and 18-month-old without unusual or expensive equipment. The temperamental dimensions covered by LAB-TAB include Activity Level, Fearfulness, Anger Proneness, Interest/Persistence, and Joy/Pleasure.

The LAB-TAB is consisted of 20 episodes constructed in 5 dimensions, 4 per dimension. We used a subset of the episodes to measure three emotionalities and Activity Level. We selected the following episodes: Cognitive Assimilation Game

(train), Modified Peek-a-boo Game, and Reaction to Sound and Light Display (Simon) episodes for Joy/Pleasure; Stranger Approach and Remote Controlled Toy episodes for Fear; Gentle Arm Restraint by Parent and Attractive Toy placed behind Barrier episodes for Anger; and Free Play episode for Activity Level. The details of each episode procedure are described in the original LAB-TAB manual and will not be repeated here.

In accordance with the original author's instructions, we employed several practices to minimize carryover effects from one episode to another (Goldsmith & Rothbart, 1991). We began with a nonstressful episode drawn from the Pleasure domains, and we avoided consecutive, potentially stressful episodes in the same room. We interspersed Fear and Anger episodes, and positioned a free play episode midway through the laboratory session. When the child became distressed, the next episode was not resumed until after the child had become sufficiently soothed.

Coding. Rating was made from the replay of videotapes by two raters. Five children were excluded from the analysis, as they became too distressed in more than four episodes. Following the guidelines for scoring the LAB-TAB, the longer episodes were typically divided into shorter intervals called epochs. Within each epoch or trial, a number of infant responses, such as smiling, reaching, or crying, were scored. Sometimes the presence or the absence of a response is simply noted; however, more often parameters of the response, such as latency, duration, and intensity, were recorded. The scoring was straightforward and we avoided subjective judgments as much as possible. Analysis for Activity Level of the LAB-TAB has not been performed yet, and will not be reported here. Reaction to Sound and Light Display (Simon) episode was not utilized in the analysis, because about half of the children either did not express pleasure, or displayed ambiguous expression. This episode was judged as inappropriate for eliciting Joy/Pleasure from Japanese children.

In terms of coding fear expression, when crying was observed, it was difficult to assess the expression using only the criteria for coding fear in the Affex (Izard, Dougherty, & Hembree, 1983). If the subject's cry was interpreted as being due to fear, we assessed the expression using both coding system of distress and fear in the Affex, and adopted higher score of the two. As many children expressed intense distress at the epoch of being picked up and held in the Stranger Approach episode, we analyzed epochs before this for the peak of this measure. The parameter in which more than 80% of children had the same score was excluded from final analysis. As a result, the following parameters were excluded: (1) duration and latency of facial expression; (2) duration and latency of bodily expression of fear (Stranger Approach episode); and (3) latency of bodily expression of anger (Attractive Toy placed behind Barrier episode). To calculate interrater reliability, two well-trained raters independently scored 10% of all the episodes, selected randomly. The percentages of agreement between the two raters were higher than 89% for all measures.

Data aggregation. All parameters were standardized before statistical analysis. We created a composite score for each episode by averaging standardized scores. Next, we synthesized the higher order composite of each emotion by averaging composite scores of episodes related to each emotion. We used this composite score for each

emotion as the measures of emotionality.

Measures of empathy-related responses (Time 2)

Laboratory observations

Procedure. The experimenter 'accidentally' caught her finger in a door. She expresses her pain to the subject with exaggeration. After several seconds, She said "I'm all right, now. Don't worry." And then the subject was shown two film clips with distress content. The first showed a baby crying. The second, being a portion of a popular cartoon for children ("Doraemon"), told the story of Doraemon who was worrying about his sister who was going to have a operation.

Coding. Two children were excluded from the analysis, because of the technical failure.

Facial reactions. Concerning the episode of the experimenter's pain, each presence of the subject's facial expression of concern (a marker of sympathy) and disgust (a marker of personal distress) was coded from the moment of the experimenter's expression of pain was seen to the time when she conveyed reassurance to the subject. Concerning the film clips, each presence of the subject's facial expression of concern and of disgust for 1 minute during the time when the character (baby or Doraemon) was in distress was coded. The coding of facial expressions was based on Affex (Izard, *et. al.*, 1983). The subject received score 1 when a facial display was observed, otherwise the score was 0.

Verbal reactions. The presence of the subject's verbal concern to the experimenter or the character in the films (for example, "Are you all right?", "Is he/she all right?") was coded. The subject received score 1 when one of these utterances were made, otherwise the score was 0.

Enacted doll procedure

Procedure. Using doll play, the experimenter began a story stem. The story was suspended and the subject was encouraged to complete the story. The three story stems for eliciting empathetic or prosocial responses used in this study were as follows. (1) Bicycle (Buchsbaum & Emde, 1990) : a peer was in distress after having fallen off a bicycle and got hurt. (2) Crying Baby : a baby was crying in the crib while the mother was absent. (3) Dropping A Candy : a peer was in distress because of having dropped a candy.

Coding. Three children were excluded from the analysis, because of the technical failure. The presence of responses such as behaviors or utterances as intended to show helping (applying a Band-Aid), sharing (giving a candy), or soothing (holding a baby) was coded. The subject received score 1 for each story when one of these responses was observed, otherwise the score was 0.

Maternal reports

Mother was asked to filled out a questionnaire, My Child, a likert-type conscience measure (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994). We calculated the scale score for empathic, prosocial response to distress of the other using 13 items.

RESULTS

The primary goal of our analyses was to make robust score of empathy-related responses from aggregation across multiple observational contexts, several analogous paradigms. In preliminary analyses, we examined the relations between indices of empathy-related reaction within the episode. Following this we examined the relations of these same indices across episodes. Next we aggregated variables which were related positively to form a composite score. Finally, in the last set of analyses, correlational and regression analyses were conducted in order to assess the degree to which children's empathy-related responses was predicted from their emotionality.

1. *Relations among Empathy Measures*

a) Facial expressions and verbal reactions to person in distress

The subjects were divided into two groups by the presence or the absence of facial expression of concern or disgust or related verbal reaction. Relations between facial expression and verbal reactions in the same episode was examined. Facial expression of concern to the experimenter's pain was associated with verbal reaction in the same episode (Fisher's exact test (2-tail) $p=0.04$). Relations between facial expressions of concern and verbal reactions to the two film clips were not significant. Relations between facial expression of disgust and verbal reaction were not significant in all three episodes.

b) Facial expression or verbal reaction among three episodes and prosocial response among three sessions of doll play

The subjects were divided into two groups by the presence or the absence of facial expression of concern or disgust or related verbal reaction. Facial expression of concern to experimenter's pain and to the two film clips were highly interrelated with each other (pain * baby film: Fisher's exact test (2-tail) $p<0.00$; pain * Doraemon film: Fisher's exact test (2-tail) $p<0.00$; baby film * Doraemon film: Fisher's exact test (2-tail) $p<0.00$). Facial expression of disgust to the two film clips were associated (Fisher's exact test (2-tail) $p=0.05$). Similarly, verbal reaction to the two film clips were associated, but not significantly (Fisher's exact test (2-tail) $p=0.10$).

In the same way, the subjects were divided into two groups by the presence or the absence of prosocial response in three sessions of doll play. Prosocial response among three stories were not related with each other.

c) Data aggregation.

Scores for each facial expression in the three episodes were summed up to form two composite scores: concern composite and disgust composite. Likewise, scores of verbal response in the three episodes were summed up to form verbal composite. Doll composite was calculated in the same way. Concern composite, verbal composite, doll composite and scale score of empathy from maternal reports were positively related to each other to some degree (for details, see, Kusanagi, Hoshi, & Takahashi, this volume). These four scores were averaged to form sympathy composite after standardization. Disgust composite was not related to other composite score.

2. *Correlations between Emotionality and Empathy Measures*

Table 1 shows the correlations between the emotionality and the empathy measures. The tendency to experience anger was related to later facial expression of disgust in distress situation. Fear emotionality was negatively associated with children's prosocial reactions to story stems using doll play. Positive emotionality was related to later sympathy composite, and fear emotionality was negatively related to later sympathy. Facial expression of concern, verbal reactions and maternal report appeared to be unrelated to emotionality.

Table 1 Correlation between emotionality and empathy-related responses[a]

	emotionality		
empathy-related behavior	fear	anger	pleasure
concern[b]	−.38	−.00	.09
disgust[b]	−.17	.46*	−.26
verbal response[b]	.17	−.01	.28
doll[b]	−.60*	−.25	.34
maternal report[c]	−.35	.41	.01
sympathy composite[c]	−.63*	.24	.52*

Note: [a] Spearman correlation coefficients [b] n = 17 [c] n = 14 * p < .10 * p < .06

3. *Prediction of Later Empathy-related responses*

In the stepwise regressions (forward selection) with sympathy composite as the dependent variable (Table 2), fear emotionality was entered at step 1; pleasure emotionality was entered at step 2; and anger emotionality was entered at step 3. The effects of fear and pleasure emotionality were significant. Fearless subject were more sympathetic later. Infant who typically experience pleasure more intensely and was prone to experience pleasure tended to show sympathetic behavior more later.

Table 2 Prediction of sympathy composite from emotionality

step	emotionality	R^2 (partial)	R^2 (model)	β	F
1	fear	.29	.29	−.59	4.98*
2	pleasure	.22	.52	.41	5.10*
3	anger	.02	.54	.13	.53

Note: * p < .05

DISCUSSION

Our results can be summarized as follows: (a) the contribution of emotionality to empathy-related responses differ between the two negative emotionality, fear and anger; (b) emotionality which was assessed by observational method was associated with vicarious emotional responding; and (c) later sympathy could be predicted by emotionality of fear and pleasure which assessed in infancy. These results clearly show that children's emotionality affects their empathy-related responses.

The direction of relation between two negative emotionalities and empathy-related responses were the same. Children who were prone to negative emotionality

(fear or anger) behaved less prosocially. Even so, the effects of emotionality on empathy-related responses differ between two negative emotions. Namely, tendency to experience fear was negatively related to sympathy but not to personal distress. On the contrary, tendency to experience anger was related to personal distress, but not to sympathy. Hence it is necessary to distinguish these two negative emotional tendencies when we examine the contribution of emotionality to empathy-related responses.

The pattern of findings in this research generally supports Eisenberg and Fabes's (1992) model. First, tendency to experience fear predicted later sympathetic behavior. Second, anger emotionality was positively related to personal distress. Third, positive emotionality predicted later sympathetic behavior. It is important to take into consideration the children's regulation of their emotion or behavior when we interpret this results. In recent years, there has been considerable interest in children's regulation of emotion (e.g., Dodge, 1989). It has been proposed that the emotion regulation can have influence upon empathy (Eisenberg, Fabes, Karbon, *et. al.*, 1996; Eisenberg, Fabes, Murphy, *et. al.*, 1996; Rothbart, *et. al.*, 1994).

Fearful children are characterized as overcontrol. These children are more likely to inhibit their behavior in response to novel situation. Kagan and his colleagues have refereed to this tendency as behavioral inhibition (Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984). Fearful children are expected to show low level of sympathetic behavior due to their social withdrawal. The results are consistent with Derryberry and Reed's theory (1994). They argued that anxious children develop 'affective maps' of their experience, serving to guide behavior toward potential relief and away from threat. Such representations may affects the overcontrol of fearful children. Arguably, the situation effect must be considered carefully. Stanhope, Bell, and Parker-Cohen (1987) reported that sociability was related to prosocial behavior in the laboratory but not to reported helping at home. On the whole, Japanese children tend to express fear to unfamiliar person or to unfamiliar situation. It is conceivable that the unfamiliarity of the laboratory situation could have affected our subjects.

Children who tend to experience anger are characterized as undercontrol. These children are prone to over arousal in distress situation so that they seem to have a tendency to experience personal distress. This pattern of response is similar to those found by Denham (1986). She found that children who showed predominantly anger revealed deficits in prosocial domains.

As Eisenberg and Fabes (1992) pointed out, positive emotionality was considered as the outcomes of optimal level of emotion regulation. Positive emotionality predicted later sympathetic behavior. The same relation has been shown in most studies on this subject. Eisenberg and her colleagues have reported that adult's report of children's positive emotionality was associated with their sympathy (Eisenberg, Fabes, Murphy, *et. al.*, 1996). This association was reported with adult subjects (Eisenberg, *et. al.*, 1994). Similarly, Denham (1986) showed that children who exhibited relatively more happy emotion in free-play situation were also more likely to behave prosocially. Besides, it was suggested that children's positive affect in a specific situation was associated with their prosocial behavior (e.g., Lennon & Eisenberg, 1987). These results are consistent with the 'tension-release hypothesis' of infant smiling proposed by

Sroufe and Waters (1976) which proposes that smiling occurs as the excitation level rises above, then falls below, some threshold. They emphasized the fact that the same stimulus can lead to either negative or positive affect depending on the infant's evaluating the stimulus situation. In our understanding, smiling occurs when infant can control their arousal at optimal level and infant's failure in regulating their arousal level, the same level of stimulus might lead to negative affect. That is, those who tended to experience pleasure more can regulate their arousal level better. For this reason, children prone to experience positive emotion can be seen to be able to behave more sympathetic in distress situation.

We turn now to an account of the methodology. We used the following three measures for assessing empathy-related responses: Facial expressions or verbal reactions to other person in distress and to person in films; children's prosocial response to story stems of doll play; and maternal reports of children's dispositional empathy. These measures were related to each other but the intercorrelations were not always statistically significant. One of the reasons for this is that the films were not adequate stimulus to arouse young children's empathy, so that only a few subjects expressed verbal reactions to the film situations. Another reasons is that the reported dispositional empathy by the mothers was about children's behavior at home (situation effect). Better method of assessment for empathy needs to be developed.

Finally, we must caution that our findings were based on a small sample. However, our findings in this study support the claim that individual differences in emotionality play a significant role in the development of empathy. We would like to go on to an even more detailed examination of the contribution of emotionality to social behavior in our future research.

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MASKING OF NEGATIVE EMOTIONAL EXPRESSION IN 3-YEAR-OLDS

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Abstract

The ability to mask of negative emotional expression in 3-year-olds was examined in two different contexts. The first context was a free play session. After playing five minutes, mothers asked their children to put the toys away. The second context was a condition in which the subject received a small present not designed as being a desirable one. The disappointing present procedure of Cole (1986) was used, but some modification was made. The experimenter announced that the child would be given a present. The child was shown 5 presents. Each child rank-ordered their present. The fifth-ranked present was then given to the child. The responses of the child when mother asked to put toys away and when given the disappointing present were analyzed. The results indicated that half of the children managed to mask negative emotional expression in both sessions and that more the girls did so than the boys in the disappointing present session. There was no relation between the two sessions' responses. This suggested that masking negative emotional expression is context-sensitive. 3-year-olds may have begun to control their emotional expressions

Key Words: masking of emotion, emotional expression, sex difference, context-sensitive

INTRODUCTION

The purpose of the study is to examine the ability to mask emotional expression in 3-year-olds. We might control or mask our expression of negative emotion if we think that demonstrating negative emotion might have undesirable consequences. Masking negative emotion often helps people maintain good social relation and avoid hurting other's feel. After infanthood children enter the complicated social world. Even for young children, it is very important to be able to mask their negative emotions in order to be accepted in a social world. When will children begin to mask their negative emotions?

Sarrni (1984) designed a "disappointment procedure" in which she observed elementary school children's spontaneous behavior when they were given toys inappropri-

ate for their age. In the first session children received an age-appropriate present following the performance of an unimportant task. In the second session the present given was a baby toy. Their expressions were videorecorded and later coded as negative, positive, or transitional. 6-year-old boys showed uniformly negative expression. 6-year-old girls and both boys and girls of 8 and 9 years were frequently coded as transitional. The results Sarrni obtained suggest, like other studies (e.g., DePaulo & Jordan, 1982), that the ability to mask negative emotion emerge during middle childhood.

Cole (1986) replicated this study with several methodological changes and extended the subjects' age down to age 4 years. She found children attempted to control the display of negative emotion with positive displays and that girls did so more than boys. Cole's study is interesting to have included preschoolers who had previously not been studied for this topic, and to find that children as young as 4 years were able to mask the display of negative emotion.

There was, however, a methodological limitation in this study as Cole recognized. Disappointing presents were always administered as the second present after children received a good present. The possibility that the positive display of emotion in receiving a disappointing present carried over from the prior positive present session cannot be ruled out. The child may be polite because s/he had just received a good present. Do children who have been disappointed first behave differently?

The present study used Cole's method, but some modifications were added. First, to avoid carry over effect, children received a disappointing present not second but first. Second, the session begun after a series of tasks lasting about one hour. In the session the experimenter thanked the child for his/her effort and for participating in the experiment and announced that his/her present would be given. This procedure made certain that children establish a strong expectation to receive high valued present. This strong expectation is necessary for children to be disappointed. Third, the subjects were limited to 3-year-old children. Many developmental psychologists expect 3-year-olds to show qualitative changes in various domains. Anecdotal evidence suggests that very young children may control negative emotional expression in real-life circumstance (Maccoby 1980), but no experimental data of 3-year-olds exists to support this view.

In addition to the disappointing procedure, another observation in a different social context was conducted. Comparing children's responses in two different social contexts can reveal possible causes of individual differences in masking negative emotional expression. If masking negative emotional expression is context-sensitive, the influence of social-cognitive knowledge could be important. If not, other factors, such as the influence of temperament could be important.

METHOD

Subjects

Thirty-six subjects, 19 boys and 17 girls, between the age of 42 and 47 months (mean age=43.22 months) were observed. The subjects lived in Sapporo city and had been observed previously in the same laboratory at 18 months of age. They were from

normal families of middle class, and no cognitive or emotional disorders were known about them.

Procedures

The procedures were administered by two psychology undergraduates. All children were observed individually in a laboratory in the RCCD, Faculty of Education, Hokkaido University. After a series of tasks lasting about 30 minutes a free play session was introduced. The mother and the child played with various toys in a laboratory without additional task. After five minutes, the mother was instructed to say to the child "Time is out. You must put the toys away". The subjects' responses were videotaped until the toys were completely put away. As many children resisted to stop playing with the toys, the mother was instructed to repeat the order to her child.

Other tasks were further conducted in about 30 minutes and the present session was introduced as the final task of the day. The experimenter entered the testing room with a box in which were five presents. The five were: a toy car, a small doll for baby, a piece of chewing gum, a sheet of stickers with popular TV characters, and a toy cosmetic makeup set. The experimenter said to the subjects, "You did very well. Are you tired?". Waiting children's answers, the experimenter said, "Oh really, you are a very good boy (girl). I present you a prize". The child was then shown the five items and asked to rank-ordered them by picking the best, the second best, and so on until all five were ranked. The experimenter said, "Guess which prize I will give you?". In a few seconds, the experimenter gave the fifth-ranked item to the child. The experimenter maintained a neutral expression, made eye contact until the child responded, or ended the eye contact after 30 seconds had passed. Finally the experimenter exchanged the fifth-ranked item with the first-ranked item, apologizing that a mistake was made.

Scoring the responses

The scoring scheme used here was a relatively simple one. The reason for this simple scoring scheme is to increase reliability of scoring and to accommodate to the greater loss of useful data of facial expression because of children's tendency to look downward and not at the camera. The responses of the subjects were coded as follows.

Scoring of responses during the free play session:

0-The child did not express negative emotion at all and put toys away soon.
1-The child did not express negative emotion at all, nor put toys away immediately.
2-The child expressed negative emotion and did not put toys away immediately.
3-The child expressed strong negative emotion and did not put toys away immediately.

Scoring of responses during the present session:

1-The child did not receive the fifth-ranked present and insisted on another present. The child expressed negative emotions.
2-The child did not receive the fifth-ranked present, or did receive it but immediately

put the present back. The facial expression was neutral and not negative.
3-The child received the fifth-ranked present with neutral facial expression. Or the child did not receive the fifth-ranked present with at least partial smile.
4-The child received the fifth-ranked present with partial smile.
5-The child received the fifth-ranked present with full smile.

RESULTS

Two coders independently scored the result by replaying the videotapes in two sessions. The first coder scored all children in two sessions. The second coder scored 20 children in the free play session and all children in the present session. The interobserber reliabilities in the free play session and the present session were 90%, 91%, respectively.

The free play session

Since five children did not play in the free play session, 31 children's responses were analyzed. The result of the free play session is shown in Table 1. No significant sex difference was obtained ($t = .09$ $df = 29$).

Table 1 Distributions, mean and standard deviation of Scores in the free play session

	0	1	2	3	mean	SD
Boys	6	3	1	6	1.44	1.37
Girls	4	3	6	2	1.40	1.06
Total	10	6	7	8	1.42	1.20

The present session

One girl was excluded from analysis because she would not rank-order the presents. The result of the present session is show in Table 2. Significant sex difference was obtained ($t = 2.16$, $df = 33$, $p < .05$).

Table 2 Distributions, mean and standard deviation of Scores in the present session

	1	2	3	4	5	mean	SD
Boys	8	6	3	1	1	2.00	1.16
Girls	3	1	8	4	0	2.81	1.05
Total	11	7	11	5	1	2.37	1.17

The relation of the free play session and the present session

The number of children observed in the both session was 30. The correlation coefficient of the scores in the free play session and the scores of the present session was not significant ($r = -.01$).

DISCUSSION

In both experimental sessions half of children could mask the display of negative emotion or show positive emotions instead of negative emotions. The result of the present study indicated that children, even as young as 3 years, can control the expression of negative emotions in a negative situation. This was consistent with Cole's (1986) findings. The procedure of the present study was more severe for children than that of Cole's study. In Cole study, children were asked to look at pictures and to discuss them with the experimenter for several minutes before the present session. In contrast, in the present study children were asked to engage in various tasks for 1 hour before the present session. Compared with children in Cole's study, children in the present study should have a stronger expectation in for receiving a desirable present and to feel the stronger disappointment when the expectation was violated. We did not expect for 3-year-old children to be able to control their expressions of negative emotion in this situation. The result suggests that the former studies of emotional expression have underestimated the 3-year-olds' ability for emotional control.

The sex difference was found in the present session but not in the free play session. In the present session girls were more likely to receive the lowest-ranked toy and show positive expressions. This was consistent with Cole' conclusion as well as results of other studies using facial expression as evidence (Feldman & White, 1980; Lewis, Stanger, & Sullivan, 1989). These sex differences may be reflected on sex-role socialization. In Japanese society there are stronger sex-role pressures for girls to appear nice and agreeable to others, especially to unknown adults. In this case, sex differences in the need for social desirability account for sex difference in masking negative emotional expressions. The result showing a lack of sex difference in the free play session is consistent with this speculation. In stead of the experimenter, mothers ordered their children to put toys away in this session. Girls were less likely to be motivated to mask their negative emotions to their mother than to the experimenter.

The correlation coefficient between the scores in the two session was nearly zero. There was no consistent individual difference in mask negative emotional expression between two different contexts. This indicates that masking negative emotional expression is context-sensitive. It is the social context that may strongly influence emotional expressions rather than temperament.

The present study was limited, however, to the observation in the laboratory. The data of socialization processes, temperament, and parent's expressive behaviors was not available. Research looking into these variables has to be conducted in order to understand better the development of emotional expressions in young children.

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PHYSICAL CHARACTERISTICS AND FOOD-INTAKE IN JAPANESE YOUNG CHILDREN

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Abstract

The purpose of the present study was to investigate the effect of food-intake between meals on physical characteristics of children. Healthy twenty-three young children of five and six years of age in a kindergarden, affiliated to the Research and Clinical Center for Child Development at Faculty of Education in Hokkaido University, participated in the study. Height, weight, % body fat, BMI (body mass index), the degree of obesity, diets and the activity level of children were measured. Height was considered to reflect developmental factors, on the other hand, weight, % body fat, BMI and the degree of obesity had no regular tendency by age and sex. Weight, % body fat, BMI and the degree of obesity were not related to the scores of a diagnosis test. Weight, % body fat, BMI and the degree of obesity were not related to activity level. In the present study, % body fat, BMI and the degree of obesity were related to the total kilocalories of food-intake between meals. Furthermore, the frequency of food-intake between meals was related to the total kilocalories contained in food consumed between meals. Our results suggest that food intake between meals has a greater effect on weight, % body fat, BMI and the degree of obesity than the activity level and daily diets in preschool children.

Key Words: diets, food-intake between meals, obesity, young children

INTRODUCTION

It is difficult to control diets for young children. In almost cases, control diets of young children is managed by their parents. In these days in Japan, it is getting a social problem of control diets for young children. Almost mothers have been accustomed to eating out, processed foodstuffs and daily dishes, then mothers have tended to have best prior to convenience in relation to diets (Inoue, 1995). It has been reported that mothers were less interested in diets of their children (Sakamoto, 1994). These tendency has a possibility to produce problems such as break down of diets. This break down which is considered as an important period for human development might lead to some bad influences for our development. In fact, some studies have pointed out this possibility. Adult diseases in young children have been considered to be related

to changes of life environment of young children, such as break down of diets, lack of exercise, psychological stress (Mizuno, 1985; Nanbu *et al.*, 1986). Since bad eating habit is considered to lead to adult diseases, obesity in young children should be regarded as an important problem not only from the point view of obesity prevention in adults but also from the point view of the prevention of arteriosclerosis (Fujita *et al.*,1985; Yamazaki, 1996). Obese young children were reported to tend low physical strength, nonactive and under a bad condition of body (Okada *et al.*, 1991). It has also been reported that obesity in young children was related to both overeating and lack of activity and/or exercise (Okada *et al.*, 1991). However, it is not clear how obesity in young children come from. In the recent research in the field of nutrition, studies for food-intake between meals are getting increase. For example, Kanazawa (1980) has indicated problems of food-intake between meals that young children tended to eat meals less and wanted to take food-intake between meals many times, etc. However, it has been reported that food-intake between meals had an important meaning as requirement of nutrition was supplied food-intake between meals in addition to three meals in young children (Yaguramaki et al., 1992). They have also reported how parents give food-intake between meals to their children might affect break down of diets. Therefore, the purpose of the present study was to investigate the relationship between food-intake between meals and obesity.

METHOD

Subjects

Subjects were twenty-three healthy young children who attained the kindergarden affiliated to the Research and Clinical Center for Child Development, Faculty of Education at Hokkaido University. They were divided into four groups: senior male group (n=6, averaged age=6.2 months), senior female group (n=3, averaged age=6.2 months), junior male group (n=8, averaged age=5.4 months) and junior female group (n=6, averaged age=5.0 months). Consent was obtained from all subjects and their parents after the purpose and the procedure were explained and the assurance that no risk was involved in participating was given.

Procedure

Height, weight and % body fat were measured. Height was measured by the height apparatus, weight and % body fat were measured by impedance method (TANITA; TBF-501). Body mass index (BMI) and the degree of obesity (Murata *et al.*, 1980; Murata *et al.*, 1987) were calculated from the formula as follows (Table 1).

$BMI = \text{Weight (kg)} / \text{Height (m}^2\text{)}$

$\text{Degree of obesity (\%)} = (\text{measured weight} - \text{standard weight}) / (\text{standard weight}) \times 100$

Mothers of the children were asked to keep records of all the food items consumed by the children, including the timing and amount of consumption for one week. This record was used to produce 3 scores according to a scheme originally designed for diagnostic purpose (Table 2). The 3 scores are : (1) standard score (full marks is 50) ; (2) balance score (full marks is 50) ; and (3) total score (full marks is the summed of the standard and the balance scores, that is, 100). It is considered that a score

Table 1. Physical characteristics of the subjects.

group	Height (cm)	Weight (kg)	% body fat (%)	BMI	Obesity (%)
senior male (n=6)	112.7±2.65	19.0±0.78##	13.0±1.33	15.0±0.55	−3.1±3.8
senior female (n=3)	115.4±2.84	23.8±3.47	19.7±5.36	17.8±2.21	14.8±13.8
junior male (n=8)	110.6±4.99*	20.3±4.32	16.0±5.62	16.5±2.83	6.9±17.2
junior female (n=6)	106.9±1.82###	17.3±1.39###§	13.6±2.76	15.1±1.35	−1.4±9.2
all subjects (n=23)	110.8±4.36	19.6±3.43	15.1±4.45	15.9±2.13	3.1±13.18

Values are mean±SD. BMI; body mass index=weight(kg)/height(m^2). *; $p<.05$ between senior famale and junior male, ###; $p<.001$ between senior female and junior female, ##; $p<.01$, between senior female and junior female, #; $p<.05$ between senior female and senior male, §; $p<.05$ between senior male and junior female.

Table 2. Diagnosis test for diets.

effects	foods	food materials	day B	day L	day D	diagnosis standard	score balance
consist body	milk, daily products	milk, fatless milk, cheese, ice cream				5	10
	egg, meat,	egg, chicken, pork, beef, lever, saurel, scombroid, salmon,				5	
	fish and shellfish	octopus, cuttlefish, dried fish, fish cake, short-nevked calm					10
	soybean, soybean products	soybean, tofu, soybean flour, miso, natto					5
for conditioning	green vegetables	carrot, pumpkin, spinach, chrysanthemum coronarium, leek parsley, green pepper				5	10
	light color vegetables	radish, cabbage, turnip, spring onion, lettuce, celery kidney bean, cucumber, burdock, celery cabbage				5	
	potato	sweet potato, potato, taro, yama-no-imo				4	10
	fruits	strawberry, apple, persimmon, orange, lemon				5	
	seaweeds	laver, sea tangle, wakame seaweed, a kind of brown algae				4	
for energy	oils and fats	soybean oil, salad oil, sesame oil, margarin, mayonnaise butter, lard				5	5
	cereals	rice, bread, noodles, buckwheal, face cake				4	
	sugar, sweet stuff	sugar, jam, honey, caramel, rice cracker, cookie chocolate				3	5
		total standard score				50	
		total balance score					50
		diagnosis score (standard plus balance score)				100	

B; breakfast, L; lunch, D; dinner

of 75 or above is normal, a score between 50 and 74 was slightly problematic and a score below 49 suggests serious problems. In the case of a score under 49, the diets should be improved immediately or the health of the person is in some risk. Therefore, it has been used as diagnosis tool for a simple nutritional guidance (Moriya, 1986). On a diagnosis test, food-intake between meals was regarded as a part of the meal which was taken shortly before or after a normal meal (Moriya, 1986). Besides, the total

kilocalories of food-intake between meals during one week were calculated by using the standard tables of food composition in Japan (Kagaku gijutsuchou shigen chousakai, 1997). A pedometer was attached to the lower back of the child to assess the child's activity level. Activity level was assesses in 2 days. In one day, the pedometer was worn from the time when the child got up till bed time. On another day, the child wore the pedometer for two hours from nine-thirty to eleven-thirty at the Research and Clinical Center for Child Development. The two hours attachment was used to check the reliability of the pedometer. For this reliability, two data from nine-thirty and to eleven thirty of two days were used. Subjects spent at the Research and Clinical Center for Child Development both of the two hours of two days (Table 3). All subjects were instructed not to shake their bodies unnaturally and to play as usual when wearing the pedometer.

Table 3. Activity level of the subjects.

group	all day	time attached (min)	activity level/min	activity level at C1	activity level at C2
senior male (n=6)	15905±8817	776.7±45.8	20.6±11.8§§	4352±981.7	3753±1095
senior female (n=3)	14527±8235	750.0±26.5	19.2±10.4§§	5244±660.1	3252±210.0
junior male (n=8)	24907±4883	765.8±62.2	32.3±4.2	4734±2321	3349±1353
junior female (n=6)	16068±5105	738.3±99.6	22.1±7.0§	3800±800.0	2954±550.4
all subjects (n=23)	18899±7597	759.3±65.2	24.9±9.49	4487±1553	3361±1045

Values are mean±SD. C1; the one day at center from 9:30 to 11:30. C2; the second day at center from 9:30 to 11:30. §; $p<.05$, between junion male and junior female. §§; $p<.01$ between junior male and senior male, and senior female.

Statistics

The ANOVA was used for comparison among the four groups. Multiple comparisons was carried out by Turkey method (Keppel, 1991). The significance levels of these tests were set at 5%, 1% and 0.1%.

RESULTS

Table 1 showed the physical characteristics of the subjects. There was a significant difference among four groups on height ($F(3, 19)=4.64$, $p<.05$). Height in the senior male group was significantly higher than that in the junior male group. Height in the senior female group was significantly higher than that in the junior female group. There was a significant difference among on weight ($F(3, 19)=3.49$, $p<.05$). Weight in the senior female group was significantly heavier than that in the senior male group and the junior female group. The weight in the senior male group was significantly heavier than that in the junior female group. The % body fat, BMI and the degree of obesity in the senior female group showed the highest value, but there was no significant difference among the four groups. The % body fat, BMI and the degree of obesity ranged from 9.9% to 29.2%, 13.7 to 23.0(kg/m²) and −9.6% to 46.7%, respectively.

Table 3 showed the results of activity level. Activity level in the junior male group showed the highest value, but there was no significant difference among the four groups. There was a significant difference four groups on the activity level per minite

($F(3, 19) = 3.42$, $p < .05$). Activity level per minute in the junior male group was significantly higher than that of the senior male group, the senior female group and the junior female group. Activity level at the Research and Clinical Center for Child Development in the junior male group showed the highest value, but there was no significant difference among the four groups.

Table 4 showed all food items consumed during one week and the 3 scores of a typical obese subject (% body fat, BMI and the degree of obesity were 22.1%, 18.4 and 19.7%, respectively). Table 5 showed all food items consumed during one week and the 3 scores of a typical thin subject (% body fat, BMI and the degree of obesity were 13.3%, 14.8 and −1.0%, respectively). Obese junior children tended to have food intake between meals more than thin junior children. Furthermore, it seemed that the obese child took sweet food in the morning and her meal style was different from average Japanese breakfast, however both in the total scores, her standard scores and balance scores according to a nutritional diagnosis test of Japanese dietitian academy were not different.

Table 6 showed the mean values of the total scores of the sum of three meals (a full score is 300), the mean values of the total scores for breakfasts, for lunches and for dinners. Total scores of the three meals ranged from 98 to 257 and there was no significant difference among the four groups. Total scores of dinner were higher than that of both lunches and breakfasts.

Table 7 showed the mean values of the standard scores of the sum of three meals (a full score is 150), the mean values of the standard scores for breakfasts, for lunches, for dinners. Standard scores of the sum of three meals ranged from 29 to 102 and there was no significant difference among the four groups. The standard scores for dinners were higher than that for lunches and breakfasts.

Table 8 showed the mean value of the balance scores of the sum of three meals (a full score is 150), the mean value of the balance scores for breakfasts, for lunches and for dinners. Balance scores for the sum of three meals ranged from 45 to 150 and there was no significant difference among the four groups. The balance scores for dinners were higher than that for lunches and breakfasts. Scores over 75 were only 1.9% for breakfast, 3.7% for lunch and 37.9% for dinner. In contrast, scores under 49 were 59.6% for breakfast, 51.5% for lunch and only 15.5% for dinner.

Table 9 showed the time for eating one meal and it ranged from 10 to 60 min for breakfast, 8 to 70 min for lunch and 15 to 90 min for dinner. The time for eating one meal was not significant difference among the four groups.

Table 10 showed the frequency and the total kilocalories of food-intake between meals during one week. The frequency ranged from 1 to 6 a day. There was no significant difference among the four groups.

Figure 1 showed the relationship between the % body fat and the total kilocalories of food-intake between meals in all subjects. The correlation between the % body fat and the total kilocalories of food-intake between meals was significant ($r = .706$, $p < .001$). Furthermore, the correlation between the % body fat and the total kilo calories of food-intake between meals in the junior subjects (both male and female), in the female subjects (both senior and junior) and in the junior male subjects were

Table 4. All diets for a typical obese single subject. (senior female, the degree of obesity is 19.7%)

day		foods etc.	standard	balance	total
December 4th (Thu)	B	sponge cake, milk	9	15	24
	L	buckwheat with shrimp tempra	22	30	52
	bm	chocolate bread, been bread, milk			
	bm	juice			
	D	chinese dish of fried rice	37	50	87
		(egg, onion, sausage, boiled fish paste)			
		smett (fish)			
		sweet soup (carrot, beef, miso, radish, burdock)			
	bm	sponge cake, ice cream			
December 5th (Fri)	B	bread, margarin, milk	9	15	24
	L	rice cake (soybean flour, sesame)	21	25	46
		radish			
	bm	rice cake (bean jam), juice, orange			
	D	rice, fish, sweet soup (carrot, beef, miso, radish, burdock)	32	45	77
	bm	rice cake (sesame)			
December 6th (Sat)	B	bread, margarin, milk	17	20	37
	bm	juice			
	L	sandwich (hum, margarin, bread), cream cake, juice	22	30	52
	D	rice, fillet (meat), salad oil, lettuce, soup (mushroom, miso), radish	27	30	57
	bm	juice			
December 7th (Sun)	B	bread, margarin, milk	14	20	34
	L	rice, fillet (meat), salad oil, oden (radish, konnyaku, a kind of fish paste)	32	40	72
	bm	potato chips, milk, orange			
	D	rice, oden (chicken, radish, konnyaku, a kind of fish paset, ganmo)	27	35	62
	bm	potato chips, milk, cocoa, orange, chocolate, sponge cake, ice cream			
December 8th (Mon)	B	sponge cake, milk	12	15	27
	L	rice ball with salmon, apple	17	25	42
	D	rice, oden (chicken, konnyak, a kind of fish paste, ganmo)	31	35	66
		nimono (beef, carrot, potato), miso soup (miso, bean curd)			
	bm	juice, orange			
December 9th (Tue)	B	corn flake, milk	9	15	24
	L	rice ball with salmon, apple	18	25	43
	bm	sponge cake, juce			
	D	curry rice (rice, potato, carrot, onion), milk	31	50	81
	bm	apple			
December 10th (Wed)	B	corn flake, milk	9	15	24
	L	rice ball, sausage, egg, bean	12	13	27
	bm	caramel, juce			
	D	rice, egg, miso soup (miso, tlied bean curd), flied cuttletish	28	40	68
	bm	ice cream			

bm ; food intake between meals
B ; breakfast, L ; lunch, D ; dinner

Table 5. All diets for a typical thin subject. (junior male, the degree of obesity is −1.0%)

day		foods etc.	standard	balance	total
December 4th (Thu)	B	bread with bean jam, apple jerry, milk	9	15	24
	L	rice ball, hamburger, orange, carrot juice	14	25	39
	bm	chocolate cake, juice, milk			
	D	chinese dish of fried rice (egg, onion, shrimp, beited fish paste) stew (potato, carrot, sqeed, sausage, onion, ham, corn, cucamber) nimono (pumkin), tomato	29	40	69
December 5th (Fri)	B	sandwich (hum, margarin, bread, cheese), apple jerry, apple juice	9	15	24
	L	rice cake (soybean flour, sesame, natto) radish	18	25	43
	bm	rice cake, bean jam, orange, juice			
	D	beef, sausage, internals, asparagas, green pepper	23	40	63
December 6th (Thu)	B	rice cake, bean jam, milk	14	20	34
	bm	sausage			
	L	buckwheat, chicken, oil, potato, egg, orange jerry, pate (vanilla, chocolate, strawberry cream)	22	30	52
	bm	candy			
	D	maton, onion, tofu, beans, noodle, celey cabbage	24	30	54
December 7th (Sun)	B	milk,apple	14	20	34
	bm	sausage			
	L	sandwich, cabbage, cream crocket, hamburg, orange juice, salad, shrimp	19	30	49
	bm	ice cream			
	D	noodle, cabage, carrot, mushroom, sausage, onion, pork, green pepper miso soup (tofu, mushroom)	14	25	39
December 8th (Mon)	B	bread, maragrin, yogurt, milk, strawberry	9	15	24
	L	noodle, pork, cake with bean jam, wakame seasweed, bean sprout	14	25	39
	bm	orange, sugar	23	35	58
	bm	bread, margarin, candy			
December 9th (Tue)	B	bread, butter, starwberry, ham, milk	9	15	24
	bm	cake			
	L	rice, natto, bread, butter, spinash	18	25	43
	bm	cookie, orange, candy			
	D	omlet rice (rice, onion, egg, ham, green pepper, mushroom) vegetable soup (potato, carrot, cabbage, onion, sausage)	28	40	68
December 10th (Wed)	B	sandwich (bread, ham, cheese), milk, tomato, yogrut, sugar	9	15	24
	L	rice, spinash, egg, sugar, chicken, tomato, orange, bean	9	15	24
	bm	cake with chocolate			
	D	curry rice (rice, pork, potato, oil, carrot, onion)	23	30	53
	bm	salad (lettuce, cucamber), miso soup (miso, radish), orange			

bm; food-intake between meals
B; breakfast, L; lunch, D; dinner

Table 6. Total scores of a diagnosis test.

group	sum of the meals	morning	lunch	dinner
senior male (n=6)	162.4±15.9	48.1±5.77	51.5±6.84	62.8±10.2
senior female (n=3)	149.9±15.4	34.5±11.1	48.9±4.66	66.5±4.12
junior male (n=8)	170.4±17.9	46.6±9.67	52.7±9.39	71.1±8.67
junior female (n=6)	158.8±19.3	43.4±4.95	46.2±9.61	69.2±10.8
all subjects (n=23)	162.6±17.7	44.6±8.56	50.2±8.31	67.8±9.32

Values are mean±SD.

Table 7. Standard scores of a diagnosis test.

group	sum of the meals	moning	lunch	dinner
senior male (n=6)	70.5±7.03	20.0±1.90	22.6±3.01	27.8±4.77
senior female (n=3)	64.4±6.47	14.2±4.49	21.2±2.51	28.9±1.27
junior male (n=8)	73.1±9.26	19.0±4.61	22.6±4.50	31.5±4.18
junior female (n=6)	69.2±9.26	18.5±2.65	19.1±4.20	31.6±4.25
all subjects (n=23)	70.3±7.85	18.5±3.77	21.5±3.92	30.3±4.22

Values are mean±SD.

Table 8. Balance scores of a diagnosis test.

group	sum of the meals	morning	lunch	dinner
senior male (n=6)	92.6±8.65	28.1±3.93	29.4±3.57	35.1±5.75
senior female (n=3)	85.5±9.01	20.2±6.64	27.6±2.19	37.6±2.88
junior male (n=8)	97.4±9.58	27.9±5.19	30.7±4.97	40.0±5.09
junior female (n=6)	89.6±12.7	24.9±2.99	27.2±5.69	37.6±6.59
all subjects (n=23)	92.6±10.4	26.2±5.05	29.0±4.56	37.8±5.48

Values are mean±SD.

Table 9. Taking time for each meal of the subject.

group	morning	lunch	dinner
senior male (n=6)	24.8±5.55	25.2±6.33	33.7±12.8
senior female (n=3)	25.5±4.66	33.7±3.95	35.1±8.91
junior male (n=8)	23.4±6.06	25.4±3.12	30.1±4.64
junior female (n=6)	28.1±8.22	28.6±6.53	38.6±9.53
all subjects (n=23)	25.3±6.28	27.3±5.73	34.1±9.24

Values are mean±SD.

Table 10. Frequency and total kilocalories (kcal) of food-intake between meals (bm).

group	frequency of bm	totak kcal of bm
senior male (n=6)	2.02±0.71	2236±636.7
senior female (n=3)	1.81±0.30	2695±1123
junior male (n=8)	2.00±0.73	2261±1507
junior female (n=6)	2.88±0.58	2268±425.6
all subjects (n=23)	2.21±0.73	2313±996.8

Values are mean±SD.

Fig. 1 The relationship between % body fat (%) and total kilocalories (kcal) of food-intake between meals (bm) in all subjects.

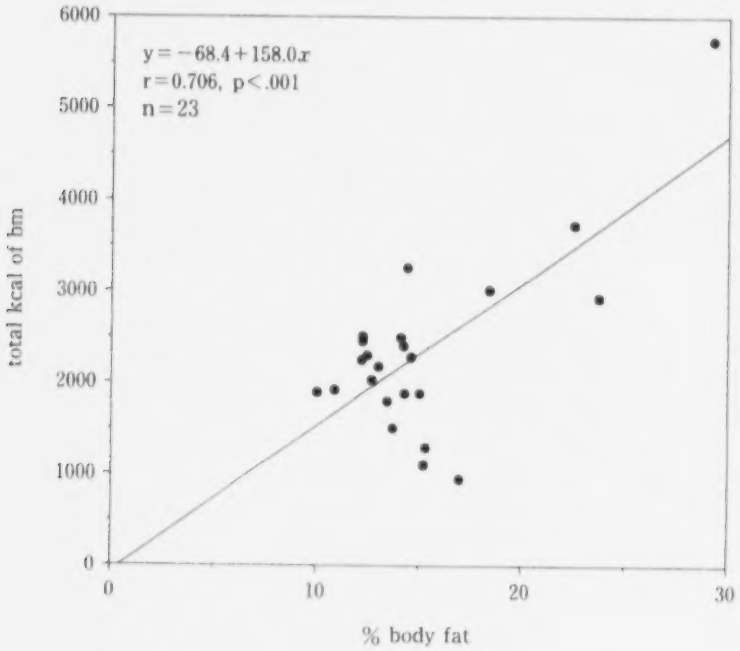
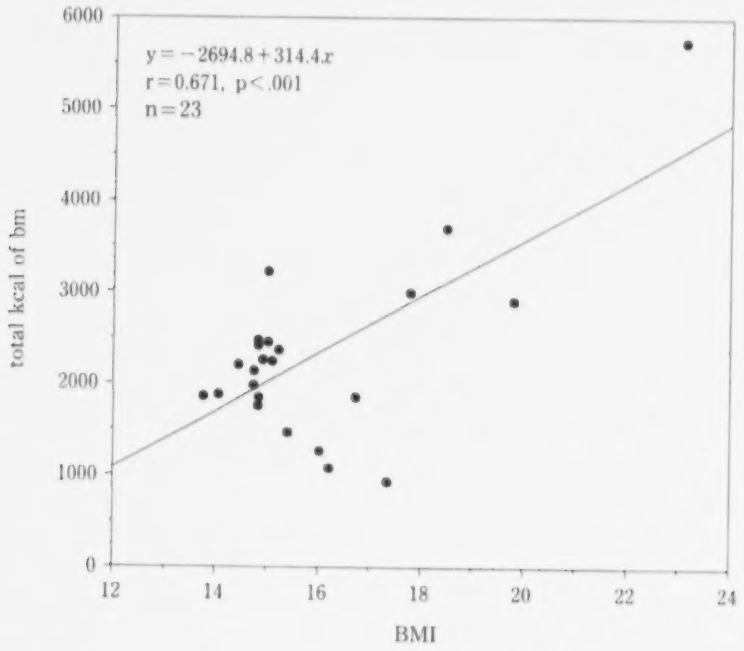


Fig. 2 The relationship between body mass index (BMI ; kg/m²) and total kilocalories (kcal) of food-intake between meals (bm) in all subjects.



significant ($r = .774$, $p < .001$, $r = .788$, $p < .01$, $r = .825$, $p < .01$, respectively).

Figure 2 showed the relationship between BMI and the total kilocalories of food-intake between meals in all subjects. The correlation between BMI and the total kilocalories of food-intake between meals was significant ($r = .671$, $p < .001$). Furthermore, the correlation between BMI and the total kilocalories of food-intake between meals in the junior subjects (both male and female), in the female subjects (both senior and junior) and in the junior male subjects was significant ($r = .738$, $p < .01$, $r = .779$, $p < .05$, $r = .775$, $p < .05$, respectively).

Figure 3 showed the relationship between the degree of obesity and the total kilocalories of food-intake between meals in all subjects. The correlation between the degree of obesity and the total kilocalories of food-intake between meals was significant ($r = .682$, $p < .001$). Furthermore, the correlation between the degree of obesity and the total kilocalories of food-intake between meals in the junior subjects (both male and female), in the female subjects (both senior and junior) and in the junior male subjects was significant ($r = .747$, $p < .01$, $r = .822$, $p < .01$, $r = .781$, $p < .05$, respectively).

Figure 4 showed the relationship between the frequency and the total kilocalories of food-intake between meals. The correlation between the frequency and the total kilocalories of food-intake between meals was significant ($r = .548$, $p < .01$).

DISCUSSION

1. *The relationship between the diets and physical characteristics*

The height of the subjects was related to age and sex. Senior children were higher than junior children and degree of growth on height of female children was more than that of male children. Junior female children were shorter than junior male children and senior female children were higher than senior male children. This result is consistent with the general tendency in Japan on height in childhood. Therefore, height was considered to reflect developmental factors, whereas, weight, the % body fat, BMI and the degree of obesity had no regular tendency by age and sex. The majority of subjects in this study tended to be relatively thin young children.

In general, the criterion for judging the degree of obesity, calculated from standard and measured weight was considered to be 20% (Fukino *et al.*, 1997). Two subjects exceeded this standard of judgment and one subject was considered to be an almost obese young children (the degree of obesity was 19.7%). The relationship between physical characteristics and the food items would be discussed. Physical characteristics was not related to the total scores, standard scores and balance scores in the nutritional diagnosis test. Therefore, the scores of the nutritional diagnosis test was suggested to judge difficult whether young children was obesity or not. Actually, in the present study, one of the tended obese young children showed the higher score, however, some of the thin young children showed the lower score in the total, standard and balance. This diagnosis test was estimated to stand the test over 75 scores, however, some young children stand the test and in contrast, many young children showed the below 49 score. Therefore, the subjects in the present study have some problems concerning to nutritional conditions whether obesity or not. Physical characteristics was

Fig. 3. The relationship between the degree of obesity (%) and total kilocalories (kcal) of food-intake between meals (bm) in all subjects.

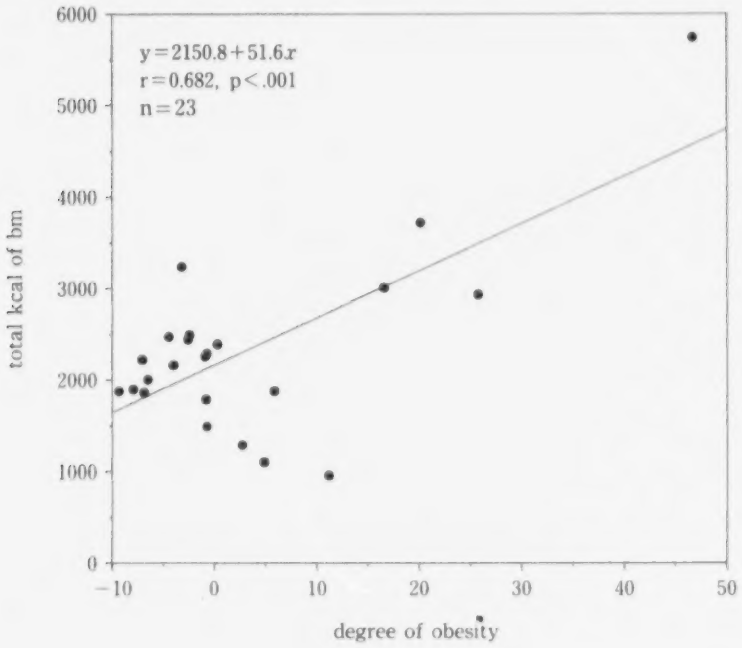
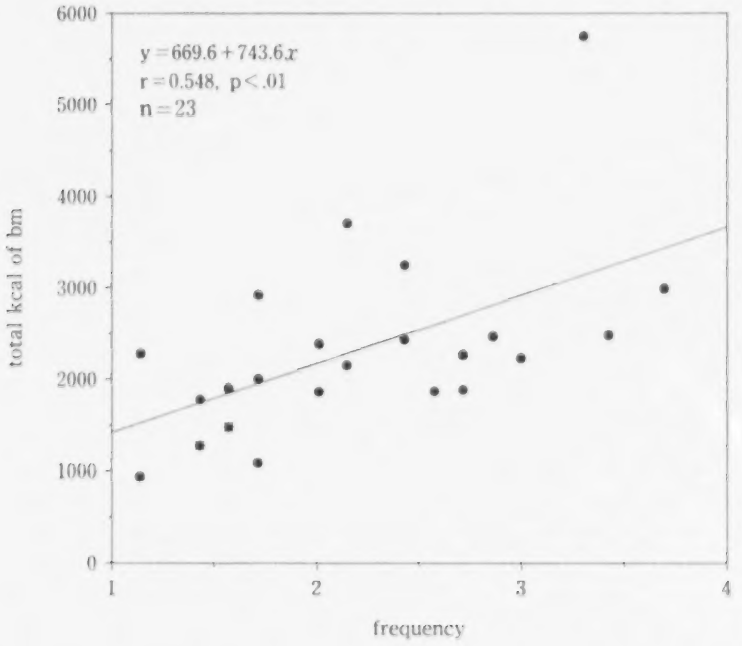


Fig. 4. The relationship between ferquency and total kilocalories (kcal) of food-intake between meals (bm) in all subjects.



not related to the time for taking meals. It is supposed that eating quickly would cause an obesity, but the present results did not supported this hypothesis, this may be because young children have less concentration for eating, so the time for taking meals in the present study may not reflect for only eating meals exactly.

2. *The relationship between the activity level and physical characteristics*

It is generally known that lack of exercise and overeating causes obesity (Okada *et al.*, 1991). Then, the relationship between the activity level and physical characteristics would be discussed. From the results of the present study, the activity level in young children was relatively considered to be numerous as it was about 3000 pedestrian numbers on average for two hours at the Research and Clinical Center for Child Development and about 19000 numbers on average an all day. Furthermore, the activity level was not related to the physical characteristics, therefore, lack of exercise was not considered to cause obesity. A pedometer was counted in response to vertical movement, however, in young children, they were supposed to shake their body unnaturally for the interest of this pedometer, furthermore, pedometer was considered not to be counted exactly if subjects wore soft shoes. In the present study, the activity level in all subjects during two hours at the Research and Clinical Center for Child Development on the second day was clearly decreased compared on the first day. On the second day, lunch time was provided, therefore, all subjects tended to be seated about over 30 minutes more than on the first day. Then, from these results, reliability of this pedometer seemed to have no problem.

3. *The relationship between food intake between meals and physical characteristics*

In the present study, physical characteristics were not related to the total, standard and balance scores of the diagnosis test. From the present results, food intake between meals caused the increase of the % body fat, BMI and the degree of obesity. This may be because both the times and foods of food intake between meals seemed to be related to obesity. That is, high degree of obese young children took food intake between meals frequently and their foods tended to be taste foods as juice, cake etc. In contrast, low degree of obese young children took food intake between meals one or two a day and their foods tended to be milk or fruits. In fact, the frequency of food intake between meals in obese young children at the present study was over more than that of Hirano *et al.* (1986) has reported. As the relationship between the frequency and the total kilo calories of food-intake between meals was significant. In this study, it was not clear the relationship between the repetitions and obesity, it is supposed that the total kilo calories of food-intake between meals a week was caused by not kilocalories of food-intake between meals for one time but by many times of food-intake between meals. As total kilocalories except for food intake between meals were not calculated, the detail relationship between food items and physical characteristics would be a future theme. Furthermore the analysis for food-intake between meals would be investigated more in detail in the future.

In conclusion, food-intake between meals was related to obesity in young children.

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THE RELATIONS OF CHILDREN'S NARRATIVES ABOUT HYPOTHETICAL SITUATIONS TO THE CONTEMPORANEOUS EMPATHY-RELATED RESPONSES AND THE FUTURE MORAL DEVELOPMENT

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Abstract

The purpose of the present study was to examine the relationships of children's responses in hypothetical moral situations to the contemporaneous prosocial and empathy-related responses in the laboratory and future moral development. Prosocial and empathy-related responses (verbal response to person in distress, and facial expressions of disgust and concern) were observed in the three situations (an adult simulating distress and viewing two video clips involving a crying baby and a cartoon character in distress respectively). 5-8months later, moral development was assessed with mother's-reports. Contemporaneously, the narrative measure of prosocial behavior was significantly associated with the facial expression of concern to the distressed adult, but not with the verbal response and the facial expression of disgust. The narrative measures of prosocial behaviors and guilt were associated with each relevant scale of maternal report across the two ages.

Key Words : moral development, narrative story stem technique

INTRODUCTION

There have been many approaches in the field of moral development, in which cognitive-developmental paradigm has been prevalent for more than thirty years. In cognitive-developmental theory, it is assumed that moral action is mediated by such cognitive process as moral definitions, moral beliefs, and moral reasoning, and that the young child's self is a-moral in nature (Blasi, 1980). Research based primarily on the cognitive theory, for the most part, begins with the school-age children and often involves verbal responses obtained from children using a standard set of moral dilemma

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items.

Recent research in developmental psychology, however, has revealed that by 3 years of age, under normal conditions, the child's self is a moral one (Barrett, Zahn-Waxler, & Cole, 1993; Dunn, 1987; Emde, Biringen, Clyman, & Oppenheim, 1991; Emde, Johnson, & Easterbrooks, 1987; Kochanska, Casey, & Fukumoto, 1995). Children as young as 2 years have already acquired an appreciation of moral standards, that is, internalized coherent rules about what to do and what not to do in a variety of situations. Such ideas of good and bad for the child appear to originate in feelings linked to acts or the contemplation of acts, that cause distress to another or provoke adult disapproval (Kagan, 1987). According to one formulation, early emotional distress following other's distress evolves into guilt feelings and becomes closely interwoven with empathetic and prosocial feelings (Zahn-Waxler & Kochanska, 1990). In other words, the moral development in early childhood has not only a cognitive aspect but is an intensely emotional process.

In addition, according to Emde and his associate, early moral development is based on knowledge that is organized procedurally (Emde, *et al.*, 1991). Infants (like adults) come to act in accordance with a variety of moral rules about what to do in various contexts, but need not explicitly recall these rules in order to follow them. Similarly, in another view by Mize and Ladd (1988), much of the children's social behavior is based on scripts, which are often translated into action without conscious reflection or awareness. Thus, the cognitive paradigm is considered inappropriate for assessing young children's procedural knowledge and scripted base for action. While pure cognitive approach could be applied to older children and adults, such a position would fail when applied to young children. It is necessary to explore the child's moral development using the different paradigm than those used in cognitive approach.

Recently, Buchsbaum and Emde (1990) have devised a play narrative technique, which is informed by recent developmental and psycholinguistic research, and by technique originated from play therapy. This technique aims to elicit children's narrative by providing children with "story stems" or the beginning sections of stories using doll plays, and the children are then asked to continue the stories. According to their report, this play narrative technique is useful in eliciting children's representations of affective themes as related to moral conflict. Children as young as 36 months were able to produce a considerable amount of verbal and behavioral responses concerning moral development in narrative form. By encouraging children to enact, this technique can elicit more emotional responses than do verbal procedures, with the result that the children's responses thus obtained are more realistic (Eisenberg, Fabes, Minore, Mathy, Hanish, & Brown, 1994). Additionally, since enacted procedure provides a way to address the child's behavioral style, or procedural knowledge (Buchsbaum, Toth, Clyman, Cicchetti, & Emde, 1992), it is suggested that play enactment technique can tap the child's procedural knowledge which in turn may reflect the nonconsciousness underlying children's responses (Clyman, 1991). From the point of view of the script, enactive assessment also reveals more of the scripted base of children's actions in routine social situations, due to its ability in promoting active rather than reflective responding (Mize & Ladd, 1988). Regarding the stability of the narrative measures, it was

shown that there was continuity across one year period (Oppenheim, Nir, Warren, & Emde, 1997). In addition, this paradigm avoids some of the problems of behavioral and contextual specificity that have plagued observational paradigms (Buchsbaum *et al.*, 1992). Thus, play narrative technique seems to offer a promising opportunity for learning more about early moral development.

Although there is no doubt in that children's responses to story stem are the expressions of internal representations, it is not clear as to the extent to which the response reflects real-life behaviors. We agree with the view of Kochanska and her associates that the relation between children's thought and feelings about moral issues as revealed in response to hypothetical situations and their actual conduct remains one of the fundamental thorny issues in research on moral development (Kochanska, Padavich, & Koenig, 1996). While children's responses to stories are often treated as the reflections of moral development or moral sensibility (Buchsbaum & Emde, 1990; Buchsbaum, *et al.*, 1992; Dunn, Brown, & Maguire, 1995; Zahn-Waxler, Kochanska, Krupnick, & McKnew, 1990), there is little evidence regarding the relation between children's responses to the story and their real behaviors in life. Although Buchsbaum and Emde (1990) described that their data were promising in discovering linkages between affective themes presented in the narrative and the actual behavior in life, it should be pointed out that their expectation is based on one single case. There was only moderate contemporaneous relation of children's objective conscience measures to some theme in narrative measures, but not to other themes (Kochanska *et al.*, 1996). It is necessary to clarify the relation between children's response to the story and the actual behavior in order to further use the narrative measures as reflecting the actual behaviors.

Thus, one purpose of this study is to explore the relation by examining the degree to which the narrative measures contemporaneously reflect the actual behaviors. As a first attempt, we focus on prosocial behavior. Prosocial and Empathy-related behaviors in the laboratory were measured in three situations (an adult distress simulation and viewing two video clips involving a crying baby and a cartoon character in distress respectively). Three kinds of prosocial and empathy-related responses were observed: verbal responses towards or about the distressed person, and facial expressions of disgust and concern. Concern and disgust are indexes of sympathy and personal distress, respectively. According to Eisenberg and her associates, personal distress is a self focused, aversive reaction to the experience of the other's emotional state, and empathic arousal results in sympathy or personal distress depending on the level of empathic arousal. Sympathy have been conceptually linked with altruistic motivation and empirically associated with prosocial behavior (Eisenberg & Miller, 1987; Miller, Eisenberg, Fabes, & Shell, 1996), whereas personal distress has been linked with egoistic motives and low levels of altruism (Eisenberg & Fabes, 1990). It is hypothesized that children who display prosocial verbal response or the facial expression of concern have higher level of prosocial narrative measures, whereas those with facial expression of disgust, lower level of prosocial narrative measure.

Another objective of this study is to explore the predictability of children's responses using narrative technique for future moral behavior. The differences in the

children's real life behaviors might produce the differences in representations of their experiences, which in turn become expressed in their responses to story narratives. Conversely, children's representation about moral issues might regulate their conduct (Kochanska *et al.*, 1996). Although the links between representation and behavior need to be treated in the two-directional way, its relationship has always been supposed in one-direction: from behavioral experience to internal representation. In clinical therapy, it is widely known that children's verbal representations control their actual behavior (Slade, 1994). In order to study this possibility, we examined the relation of the narrative measures to future actual behaviors. Moral conduct was assessed by using maternal report for child's conscience, "My Child" (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994). This questionnaire was designed to measure multiple aspects of conscience, with good psychometric qualities and was predictive of children's behaviors in laboratory.

METHOD

Subjects

Subjects in this study consisted of two groups. One group (16 boys and 14 girls) had children who visited the health centers in Sapporo City for physical check-up at 18 months and their mothers who were agreed to participate in a longitudinal study involving laboratory observation. Another group (6 boys and 4 girls) had children who were going to enter an experimental kindergarten affiliated to the Research and Clinical Center for Child Development in the Faculty of Education, Hokkaido University. At the time of laboratory assessment, children's ages of the first group ranged from 41 months to 45 months (mean=42.7 months) and those of the second group ranged from 45 months to 53 months (mean=48.8 months). When their mothers completed the questionnaire of conscience, the range of children's age for the former was from 49 months to 52 months (mean=50.4 months), and for the latter, the range was from 50 months to 58 months (mean=53.7 months). All subjects were psychologically and family-wise normal children. The relation of narrative measures to laboratory measures was examined only for the former group, and the relation of narrative measures to future moral development was examined for both groups.

Children's Narrative Measures of Moral Development

Procedure. During the narrative session, with a few exceptions, the experimenter and the child sat at a small table facing each other without the child's mother's presence. If the child insisted the mother's presence, she stayed in the laboratory but was kept out of view. In each narrative assessment, the experimenter began a story stem using doll plays, and encouraged the child to complete the story (i. e. saying "show and tell me what happens next"). The set of dolls used included a rabbit family (Sylvanian family) which had a mother, a father, and two children (one younger and one older). Two children doll was chosen whose gender was the same as the child being tested. When a peer (a squirrel doll) was involved in the story stem, she or he was also designated the same gender as the subject. The child's spontaneous verbal and/or behavioral responses were followed up by nondirective prompts by the experi-

menter. The Experimenter typically repeated the child's utterance and/or articulated what was enacted behaviorally for the purpose of clarification. This often led to further enactments and/or verbalizations. Standard probes were used when the child did not want to continue the stories. The first more general probe (e. g., "what do they do?") was followed by a more concrete one (e. g., "what do A (the protagonist's name) do when B (a peer's name) knocks down his block building?").

Before the actual test, a "warm-up" story stem concerning a birthday party was demonstrated to make sure the child understood the game and was sufficiently motivated. We presented the following story stems to children who had exhibited more than three of the following four criteria by the end of the warm-up session; (a) talking to the experimenter, (b) manipulating the dolls, (c) talking through the character, (d) saying something that relates to the birthday party story. Two boys who did not meet these criteria, and one boy who refused to respond to all stories in spite of having met these criteria, were excluded from the study.

The story stems. Nine story stems were used. Some of them were adapted from past work (e. g., MacArthur Story-Stem Battery (MSSB), Oppenheim, *et al*, 1997; Buchsbaum & Emde, 1990; Mize & Ladd, 1988), and others were developed by us. These story stems were selected in order to investigate three themes in moral development: Empathetic or prosocial theme, rule abidance theme, and guilt theme.

Three moral stems for eliciting empathic or prosocial responses were as follows. (1) Bicycle (Buchsbaum & Emde, 1990): a peer was in distress after falling off a bicycle and getting hurt. (2) Crying Baby: a baby was crying in the crib while the mother was absent. (3) Dropping A Candy; a peer was in distress because of having dropped a candy.

Other three story stems were selected to probe the child's representation of rule abidance in the face of a temptation to violation. (4) Nap (Buchsbaum & Emde, 1990): mother told the protagonist to go and take a nap in a bed right next to a toy box. (5) Bike Dispute (adapted from Buchsbaum & Emde (1990), with the modification of substituting a bicycle for a horse): a peer pushed the protagonist off a new bicycle. (6) Block Building (Mize & Ladd, 1988): a peer prevented the protagonist from playing with his/her blocks because he or she had been playing first, and knocked down the protagonist's blocks. The last two stories focused on the theme of restraining aggression in the face of conflict.

Other three story stems probed the child's guilt response. (7) Wet Pants (Buchsbaum & Emde, 1990): the protagonist had an accident of wetting his or her underpants. (8) Spilled Juice (MSSB): the protagonist spilt the juice. (9) A Stuffed Bear: the protagonist broke a peer's new stuffed bear.

Coding. The data was coded from the videotapes. For each story, we coded whether or not the subject/protagonist exhibited a verbal and/or enactive response related to the story. For example, we coded only empathic/prosocial response in Bicycle, Crying Baby, and Dropping A Candy story, and did not code these responses expressed in other stories. When the subject/protagonist expressed the response related to the story, the subject received a score of one for each story, and when otherwise, the subject received a score of zero. The Nap story was excluded from the coding,

because in this story almost all subjects exhibited compliance to the mother, that is, a protagonist immediately went to take a nap as told. The empathy/prosocial responses included such as behaviors or utterance as showing helping (applying a Band-Aid), sharing (giving a candy to the peer), and soothing (holding the baby in the arms).

For Bike Dispute and Block Building story, we coded the presence of aggression of the subject/protagonist, such as hitting, punching, and kicking, enacted or verbalized (1=present, 0=absent). For these two stories, we also coded whether or not the subject recognized that to have a quarrel with peer was bad. For example, when the subject/protagonist expressed a sense of affiliation to the peer (playing together), or a mother scolded the peer, the subject was judged to have recognized that quarrelling was bad.

For three guilt stories, we coded whether or not the subject/protagonist felt guilty. For example, when the subject became quiet and subdued, the mother scolded the protagonist, or the protagonist made amend or apologized, the subject was judged to have felt the guilt. For each subject, scores for prosocial, aggression, recognition of dispute, and guilt were summed across stories. As a result, these scores indicated the number of narrative stems in which subject/protagonist exhibited relevant responses. For prosocial and guilt stories, we also coded whether or not all figures (containing the protagonist) express relevant responses. There seems to be a possibility that the subject have another person help or repair because the protagonist is incapable of doing by his- or herself. Hence, there were two kinds of scores for prosocial behavior and guilt.

Children's Prosocial Responses in the Laboratory

Procedure for assessing children's prosocial and empathy-related responses in the laboratory is described in another paper in this volume (Hoshi, Kusanagi, Chen, & Takahashi, in press). Children's verbal prosocial responses (for example, "Are you all right?"), and facial expressions of disgust and concern in each situation were coded form the video tapes. We gave a score of one to the child when he or she expressed each response.

Maternal Reports of Children's Conscience

Thirty-four mothers filled out "My Child", a 100-item questionnaire with multiple conscience scales. The response format was a Likert-type scale, with score 1 for "extremely untrue, not at all characteristic" of my child and score 7 for "extremely true, very characteristic" of my child. These scales were as follows (our alpha in parentheses): (1) guilt, remorse/other emotional reactions after transgression, mishap, wrongdoing (.67), (2) concern over good feelings with parent after wrongdoing (.89), (3) confession (.76), (4) apology and/or promise not to do it anymore (.89), (5) reparation/amends (.81), (6) concern/corrections occasioned by others' transgressions (.73), (7) internalized conduct (spontaneous self-correction/self-regulation/compliance without surveillance) (.89), (8) empathic, prosocial response to another's distress (.90), (9) symbolic reproduction of /dealing with wrongdoing (.79), (10) sensitivity to flawed or damaged objects, themes of wrongdoing (.55).

RESULTS

Children's Responses to the Narrative Story Stems

Table 1. shows the percentages of subjects that exhibited prosocial, guilt, aggression, or recognition of dispute being bad for each story stem. In all guilt/reparation stories, more than seventy percent of the subjects constructed stories in which at least one figure expressed guilt feelings or reparative responses. In all prosocial stories, more than fifty percent of the subjects constructed stories in which at least one figure behaved prosocially. In both conflict with peer stories, however, only about thirty percent of the subjects acknowledged that quarrelling with a peer was bad. No gender differences were found for all narrative measures.

Correspondence between the Narrative and Laboratory Measures for Prosocial Behavior

Because of the absence of gender differences in both scales of My Child and the narrative measures, we combined all subjects in the analysis. Fisher's exact tests were carried out to evaluate the association between narrative prosocial measures, and prosocial and empathy-related responses in the laboratory. Subjects were divided into two groups based either on the median of each of the narrative prosocial score or on the presence/absence of each response in each laboratory situation. There was a significant association only between the narrative prosocial measure for subject/protagonist and the facial expression of concern in the adult's pain situation ($p < .05$, one-tailed test). However, the association between the narrative prosocial measure for all figures and the facial expression of concern to the adult was not significant. The facial expressions of concern observed when viewing the video clips yielded no significant association with the narrative prosocial measures. Subject's disgust and verbal responses of concern in each of the three situations were found to have no significant association with narrative prosocial measures.

Table 1 Percent of Subject Expressing Response

	Protagonist/Subject	All Figures
Prosocial		
Bicycle	37.8	62.2
Crying Baby	51.4	56.8
Dropping A Candy	21.6	56.8
Guilt/Reparation		
Wet Pants	37.8	73.0
Spilled Juice	70.3	81.1
A Stuffed Bear	56.8	78.4
Aggression		
Bike Dispute	32.4	
Block Building	29.7	
Acknowledging quarreling being bad		
Bike Dispute	35.1	
Block Building	32.4	

The Predictability of Narrative Measures for Maternal Report of Children's Conscience

We divided subjects into two groups based on the median of each of the narrative score, and examined the associations between the narrative and the maternal report of children's conscience measures by t-test. The result was presented in table 2. (When we conducted Wilcoxon 2-sample test with continuity correction of .50 to confirm the result, the same results as that by t-test were obtained.) Children with higher score for the narrative prosocial measure for the subject/protagonist had significantly higher score than those with lower score on the following conscience scales: guilt; concern about good feelings with parent after wrongdoing; empathic prosocial response. In addition, as was expected, children with higher score in the narrative sessions for guilt for all figures showed significantly higher score on the guilt scale of the questionnaire than those with lower score. No significant association between the other narrative measures and the subsequent children's conscience measures was found.

DISCUSSION

The results of this study provided some support for the view that the narrative technique has potential as a tool for obtaining data from young children about their moral behaviors in real lives. The responses to the story stems appear to have both contemporaneous and predictive validity to some extent.

Contemporaneously, children's facial expression of concern in the simulated experimental situation showed significant association with the amount of prosocial response to the story stems. As mentioned in the introduction, sympathy for the other has been theoretically linked with altruistic motivation and empirically associated with prosocial behavior. Our result has confirmed this linkage, and has provided evidence indicating the existence of correspondence between narrative measures and objective behavior measures. However, our result did not show a significant association between the children's prosocial narrative measures and prosocial verbal responses of concern in each of the three situations. In addition, our result did not support the view that the subject's personal distress is connected more with egoistic motives and low levels of altruism as argued by Eisenberg and Fabes (1990), for no relation between narrative

Table 2 Relations of Narrative Measures to Scales of Conscience

	Narrative Measures		
Scale of My Child	Higher M (SD)	Lower M (SD)	t
	Prosocial response of the subject/protagonist		
Guilt	4.95(.41)	4.44(.59)	−2.67*
Concern about good feeling with parent	5.26(.79)	4.19(1.34)	−2.71*
Empathic prosocial Response	5.48(.60)	4.95(.69)	−2.05*
	Guilt/reparation of all figures		
Guilt	5.01(.38)	4.59(.56)	−2.46*

* $p < .05$.

prosocial measures and disgust expression to the person in pain or a distressed others in the video clips was obtained. These unexpected results concerning the verbal response and disgust in the adult distress in simulated situation appear to be due in part to the low frequency of these responses in this situation: only five children displayed each of the responses. In addition, the contents of video clips and/or film viewing might be inappropriate for measuring the empathy-related response, because narrative prosocial measures were associated with children's facial expression of concern in simulated adult distress, whereas not with those in film viewing. According to the Eisenberg and Miller's (1987) meta-analysis of literatures concerning the relation between empathy and prosocial behavior, the method of assessing empathy did influence the strength of the relations obtained. While children believed that an adult in pain in experimental situation were real, they probably knew that crying baby in the video clip was not here and now, and the animation character was only fictional.

Across time, the prosocial behavior and the sense of guilt as displayed in the hypothetical situations showed relation with the empathic and the prosocial response and guilt feeling, respectively, in actual life. This result implies important possibility that the internal representation and/or procedural knowledge of the child at one time can influence his/her behavior later on. In addition, it is surprising that children's responses to only three stories predicted the future behaviors. For the result of Weidman and Strayhorn (1992) showed that it was necessary to administer "twenty-six" stories in order to provide some validation for the prosocial choice measure in the hypothetical situations. Our result seems to indicate the effectiveness of the play narrative technique in predicting the children's moral development. This effectiveness appears to be due to coding not only the verbal response but also the enactive responses. In fact, there are evidences that the enactive response, or both the enactive and the verbal responses using puppets had more predictive power than only verbal response (Kobayashi, 1993; Mize & Ladd, 1988).

Prosocial responses to narrative story stems have also indicated the cross-time associations with the scales of guilt and concern over good feelings with parent. According to Hoffman (1988), empathic distress occasioned by pain or distress in others that is caused by the observer will be transformed by self-blame into a feeling of guilt. In fact, there are evidences to support the association between the feeling of guilt and empathy (Zahn-Waxler, Kochanska, Krupnick, *et al.*, 1990; Thompson & Hoffman, 1980). Based on this view, the association between the prosocial responses to story stems and guilt in future actual life can be expected, because both have a common origin, that is, empathy. It is not surprising that the prosocial narrative measure and the scale of concern over good feeling with parent after wrongdoing were associated, given that guilt is theoretically related to the former as described above, and is empirically related to the latter (Zahn-Waxler, Kochanska, Krupnick, *et al.*, 1990). It is suggested that guilt is mediated by empathy and concern about interpersonal relationships.

The responses to the story stems about conflict with peer were found to have no association with the future moral development. This result is likely due to the fact that subjects in this study had not sufficiently internalized the standard concerning peer

relationships, because most of them did not have the experience of living in group, that is, they did not go to kindergarten or to nursery school. Maybe, they are on the way to internalizing the rule for interacting with peers.

In this study, we explored the contemporaneous relation between the narrative measures and the objective measures only concerning the prosocial behavior. In future study, the correspondence between other narrative measures and other moral behaviors (guilt and reparation behavior, and aggression) should be addressed. In addition, the predictive validity of the narrative measure needs to be studied observing behavior in real life, instead of relying on maternal report. Although in this study we coded the responses without making distinction between the verbal and the enactive response, it might be better to code these responses separately. For, these responses might be different in nature, that is, verbal responses are expressions of declarative knowledge and the enacted responses are expression of procedural knowledge. If procedural knowledge is in deep unconsciousness, it is expected to be developmentally more invariable and more predictable of actual behaviors than declarative knowledge. In addition, to examine the relation between verbal response and enactive response is associated with very interesting issue. Some theorists argued that declarative knowledge domain is susceptible to persuasive distortion and is more distant from a core self built up from prior sensorimotor experience or procedural knowledge (Stern, 1985; Winnicott, 1965). In contrast to this view, Emde's theory of the affective core of self (1983) has emphasized continuity of self. We think the narrative story stem technique might be useful to address this issue. We believe that future work using the narrative technique will lead to greater understanding of the child's internal world.

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'JIYANG': LONG-TERM NONPARENTAL CHILD REARING IN CHINA

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INTRODUCTION

The cultural contexts of childrearing has received great attention in recent years. Many researchers have made efforts in finding out and in verifying the existence of cultural differences in child-care and their consequences (e.g. Barratt *et al.*, 1993; Martini, 1996; Bradley *et al.*, 1996; Franco *et al.*, 1996). However, most research has focused on comparing mother's child-care styles in different cultures, while in many cultures the task of child-care is not expected to be fulfilled by mothers only (Houndoumadi, 1996; Super & Harkness, 1986). For example, in present day China, a large percentage of children under 6 are being farmed out to live under the care of their grandparents or other relatives for an extended period of time. The task of childrearing in present day China is widely considered the responsibility, indeed the privilege, of the extended family, rather than that of the nuclear family, as in Japan or most western industrialized societies. Many Chinese young children spend an extended period of time away from their own parents. This practice, known as 'jiyang' or 'farming out', has been in existence for quite a long time. It seems that the new social conditions in recent decades have resulted in its more frequent presence. From the point of view of current attachment theory, which emphasizes the importance of a child' focused attachment relation with the mother, this practice would seem to cause undesirable effects on children's later development as a consequence of long term separation from their own mothers. At the moment, we are not sure if 'jiyang' has caused any significant problem in child development in the population. Nor do we have any systematic information concerning other aspects of this practice. The inquiry into this phenomenon will deepen our understanding of not only the role of the cultural context in child-care, but also the role of social unit larger than the nuclear family has on child development.

METHOD

71 mothers in their twenties (mean age=27.7 years) from Linze county, Gansu province in northeast China were asked to fill out a Questionnaire designed by the authors, in August, 1997. The mothers' averaged age of marriage was 22.8 years and they had an average of 1.1 children (with a total of 46 boys and 28 girls, the rate of single child family was 95.8%). Most of them are living in nuclear families (67.6%) and have works outside. The Questionnaire included items for demographic data, the

average amount of time each of the child's caretaker spent with the child at daytime before the child was 6 years old, the sleep arrangement of the child at night, and some detailed conditions concerning 'jiyang', including emotional response, length of separation from own parents.

RESULT AND DISCUSSION

Present situation of child being farmed out

The phenomenon of 'jiyang' is very extensive in northeast China. Our result shows that 43 out of 71 of the mothers (60.6%) had the experience of farming out their children for more than 10 days. The children' s average age when taken to their surrogate caretakers' home was 16.5 months (ranging from 3 to 61 months) while their average age of return to their own parents' home was 33.2 months (ranging from 8 to 72 months), with an average of 16.8 months of separation from own parents. Most of the children were sent to their grandfathers and grandmothers (57.9%) or maternal grandparents (34.2%). Some other children were sent to their maternal aunts (5.3%) or nonrelative dry nurses (2.6%).

The main reason reported for sending their children away was that the parents were 'busy over their work' (67.5%). All kinds of other reasons were also reported, such as 'in order to wean the child' (10%), other reasons such as 'can not find baby sitter', 'father and mother worked and lived at different areas', 'mother's illness', 'had no time' accounted for 12.5% of all reasons.

Before being sent out, the percentage of children who had already been cared by their future surrogate caretakers (at their parents' home) and were familiar with each other was 70.7%, those who had met the future surrogate caretakers for a few times but had not became familiar with each other occupied 24.4%, while those who didn't know their future surrogate caretakers until they were sent out with them accounted for 4.9%.

When the children were to be sent out, 34.1% of them were reported to have shown negative response (cry or show unwillingness), the rest (65.9%) were reported to show no special response.

The parents would take an average of 4 hours (one way) if they went to see their farmed out children, in which 55% of them only took less than 1 hour, 22% of them 1.5–2 hours and 23% of them 3 hours. Most of them (89.5%) lived nearby that they went to see their children by bike or bus, but 10.5% of them had to go by train traveling several hours.

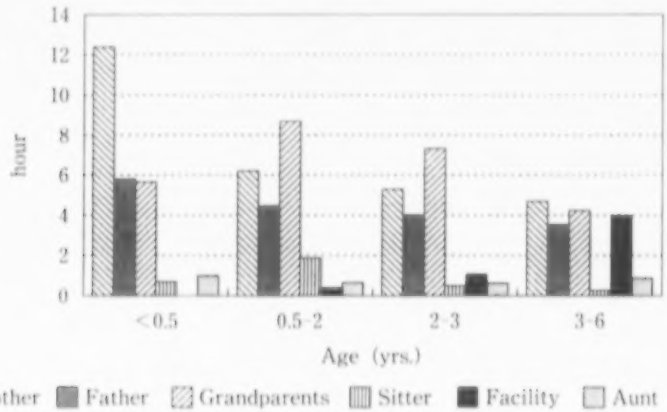
During the time their children were farmed out, 78.9% of the parents kept on contacting with them by going to see them at least once a week. 10.5% of them visited their child once half a month, and 10.5% of them once more than one month.

When the children were brought home from their surrogate caretaker's home, 51.2% of them were reported to appear as 'happy' or 'excited' (44.4%), 27.8% as 'miss grandma and grandpa', 11.1% as 'out of place, inhibited' or 'behaving like a stranger', 5.6% as 'curious to everything in the room' and 5.6% as 'irritable'. The average period of reported reaction lasted 9.3 days (ranging from 1 to 30 days). While 48.8% of the children were reported to show no special response.

The historical and cultural context of farming out children

About the arising of the phenomenon of farming out children in China, we can find the source from it's history and social background. Due to hard economic conditions of China, all the family member had to share work as fully as possible, so it was a traditional social division of labor in Chinese family for the young father and mother to work outside and the aged grandmother and grandfather to take care of children and do housework. This kind of tradition is still prevalent in China, especially in rural area. As figure 1 shows (from this investigation), the average time of the grandparents spent with their grandchildren at daytime was more than 4 hours before children were 6 years old. Especially when children were from 6 months to 3 years old, they spent 7-8 hours at daytime every day with them. Quite a lot of grandparents even slept with the children at night (see figure 2).

Fig. 1 Average time of each caretaker spent with the child at daytime

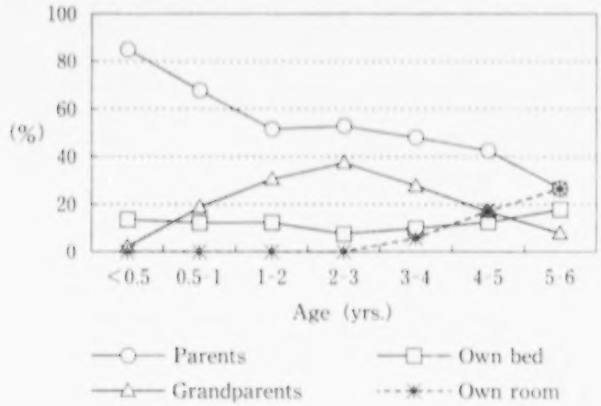


With the development of industry, more and more young men leave the countryside and come to the town or city to set up their families. When their children are born, they still expect their children to be taken care of by their aged grandparents as in previous time.

Based on our investigation, the present average family size is 3.6 person, while it rose to 4.5 when the children were under 1 years old. Even though most of the mothers reported that they were living in nuclear families, with the birth of children, the grandparents (in many cases either the grandmother or grandmother-in-law) would come to live with their children's families to take care of the lying-in woman and the newborn baby for one month or longer (in some cases the pregnant women would go to their parents', the future grandparents' home to deliver). This is a traditional custom of Chinese child-rearing called 'zuoyuezi', which arose from the belief that the lying-in woman was so vulnerable that she was not supposed to take care of the baby and do the housework by herself, on the contrary, she need special care from others.

In fact, after one month of 'zuoyuezi', quite a lot of grandparents remain with their children's families to help with the young mothers caring the babies, especially after the child is half a year old for the mother has to return to work according to the current practice stipulated by the government.

Fig. 2 Percentage of each caretaker spent sleeping with the children



It maybe the best choice for grandparents to come to live and share child care with the parents. But as a result of all kinds of difficulties, such as lack of space, difficulty of the grandparents' adapting to city life style etc., the two families can not be put together for a long time, which led to children being farmed out and be cared separately by their grandparents or other surrogate caretakers.

It should be noted that the people in the rural area in China have to and can be expected to depend on their children or grandchildren when they become old. This may be one of the most important reasons why they are willing to bear the hardship work of child-care. The strong Chinese sense of family also cause the aged to devote much attention to their own offsprings.

The influence of farming out to children : cultural beliefs about child care

'Do you think there is any influence of farming out on your child?' To this question, 31% of the mothers who had farmed out their children gave positive answers, including 'enrich child's experience' or 'develop child's skills for supporting himself/herself' (5) and 'deepen child's love to grandparents' (3), *etc.* There was also 31% of the mothers who gave negative answers. Most of them pointed out that their children were 'spoiled by their grandparents' and became 'selfish' or 'lacking vigor and drive' (7). Only one mother reported that 'the child suffered bad health resulted from crying too much over being separated from parents'.

Even though the mothers' reports were not totally reliable, it is quite evident that their attitudes and beliefs about mother-child separation are quite different from that of mothers in America, Japan and some other countries, where mother-child bonding is believed to be so exclusively important that efforts were made to verify the effect of even short period of separation, with the belief that even a short separation would somehow exert a negative influence on the child by bringing about all kinds of problems, from psychiatric depression, low performance at school, to unsatisfactory marriage later (Bookcock, 1997, Butterworth & Harris, 1994). It seems that Chinese mothers tend to believe that children have high plasticity and resilience. In their view, the child's response of crying for being separated from the mother is just a transient

phenomenon, he (she) will forget it quickly and establish a new attachment relation with the new caretaker. Moreover, as mentioned above, some of them even believe that it is a good experience for the child to be trained to adapt to other social environment early in life. Owing to this belief, mother-child separation is regarded as an unavoidable and common event in China. In our study we found that 40.8% (29 out of 57) of the mothers simply used the method of 'separating child from mother' to wean, including sending their child to grandmother or mother leaving the child (in the case of extended family) and go back to her own mother's home for 3 to 5 days. As the period of separation for weaning was almost shorter than one week, most of the cases were not included in this analysis.

In fact, some of the mothers (11%) themselves also had the experiences of being farmed out when they were very young. Their recall revealed that the average age of being farmed out was 26.1 months and the age of being taken back was 56.8 months (average farmed out period=30.7 months). Most mothers (85.7%) reported that their experience of being farmed out had no influence on them either physically or psychologically. Others (14.3%) reported in a positive way saying that the opportunity 'strengthened their sense of love to grandparents'. It was possible that the mothers' own early experiences affected their own beliefs and their choice in farming out their children.

Just as it is unimaginable for a Japanese mother to send her child away for a long period of time, one can not easily cast off the cultural bias of the culture one lives. So do the developmental researchers. We have to widen our outlook in order to avoid the limitation of individual culture and to reach a truer conclusion.

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TOWARD A SYMPATHETIC PROPENSITY THEORY OF MIND

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ABSTRACT

Numerous cognitive studies on theory of mind have been done. However, their paradigms are mainly desinged to probe if children can infer an imaginary person's behavior derived from the person's belief in an imaginary situation. They have given little attention to the fact that it is the person in close relation whose mind we would like to know. In this article what is the essential character of human relationships is discussed. Then, it points out limitations of cognitive perspectives on understanding others' minds comparing with emotional communication between infants and their close partners. Significance of sympathy as the essential propensity in understanding of others is considered through the comparison between Japanese term *kokoro* and mind. Finally, as human interactions naturally include both cognitive and emotional aspects, it suggests the need for integral approaches to understand their interrelations in future researches.

Key Words: intimate relation, emotional communication, theory of mind, *kokoro* and mind, integral approach

I. AN OVERVIEW OF "THEORY OF MIND" STUDIES

The topics on "Theory of Mind (TOM)", how children understand others' intentions, beliefs, or emotions, have been given great attention by researchers in cognitive development for the past decade. According to a seminal work by Premack and Woodruff (1978), to understand others' minds is that one can attribute the other's mental state to the cause of his/her acts or to their own past similar experience. This notion suggests that the understanding of invisible others' mental states requires the person to construct them mentally by means of inference or contribution, i.e., to need a "theory". Along this viewpoint, Wimmer and Perner (1983) developed "the false belief paradigm", and the paradigm became the most popular methodology to study in the

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field. It has brought a widely-known finding that there is a normative age boundary around age four to reach successful understanding of others' false beliefs. This under -four- impasse was even interpreted as indicating a conceptual deficit of understanding others' minds (Perner, Leecam & Wimmer, 1987).

Recent studies in this field are shifting their research focuses to search for the precursor of TOM rather than its age limitation. For instance, Wellman demonstrated that age 2-3 children can not only identify the difference between thinking and acting, and also predict what others desire (Wellman, 1992; Wellman & Woodlly, 1990). It is also suggested that in the case that intentions are overtly expressed, even under-four children can predict others' actions though it is difficult for them to infer the background intentions of the actions (Moses, 1993; Robinson & Mitchell, 1995). As Mitchell and Lewis (1994) proclaimed, this approach was aimed at challenging the proposition that TOM suddenly appears at a certain age. Leslie's theory (1994) may provide a good illustration of this challenge. The theory presented three modules that appear at different age levels, develop in parallel, and serve as independent learning mechanisms. The first module was named the "Theory of Body Mechanism (ToBy)", which begins to develop at 3-4 months of age. ToBy is the module to process information about behavior of physical objects and to generate representation of classes of objects (Moore, 1996). According to Leslie's explanation (1994), if an object changes motion state not because of external impact, but by itself, it will be recognized more readily, especially if the object is an agent. Then, ToBy is presumed to provide distinction of, and identification of, the agents from non-agentive objects. However, agents are identified not only in terms of their physical movement properties, but also by their goal-directed actions to connect objects and spatially and temporally distant goals. Around 6-8 months of age, to process information about agents' goal- directed actions, it is hypothesized that the first component of TOM Mechanism (ToMM1) appears. ToMM1 enables infants to use representation similar to what is needed in joint attention or social referencing which presents the relation between agents and possible objects aimed by their actions. Finally, beyond the visible reality, when the second TOM Mechanism (ToMM2) develops about 18 months, children start to processes information about agents and their mental relations to propositions. In other words, ToMM2 provides meta-representation of the mental relationship between actions and possible propositions (e.g., a girl is crying because she tumbled down and was hurt on her knee).

In line with Leslie's theory, Baron-Cohen (1994, 1995) examined ToBy giving special emphasis on detection of others eye directions to indicate their intentions. In his theory, ToBy was paraphrased into three subcategories: a) the Intention Detector (ID), b) the Eye Direction Detector (EDD), and c) the Shared Attention Mechanism (SAM). SAM comes on line toward the first birthday, and generates triadic representations such as "Agent sees an object" and "Self sees the object", then "Agent sees 'Self sees the object'". Thus, SAM was considered the most significant as a precursor of TOM.

II. ALTERNATE VIEW: CLOSE COMMUNICATION IN INFANCY IN EVERYDAY CONTEXTS

However, in spite of these significant works of TOM, they seem to have produced an incongruence to studies on early emotional communication in everyday close relationships. The latter studies have evidence that understanding others' inner states already started in the earlier stage of human life. In fact, since the 1970's countless studies have been made and they evidented infants have enough abilities to interact mutually with their parents (e.g., Bateson, 1979; Beebe, Jaffle, Feldstein, Mays, & Alson, 1985; Stern, 1985, 1995; Trevarthen, 1979, 1984, 1993). The findings confirmed that reciprocal influences between interactants are the basic character of human relationships (Cappella, 1981). Thus, it can be concluded that the central principle of human relationships is the mutual agreement that one's actions will be received and responded as anticipated by the other (Trevarthen, 1993). Murray and Trevarthen's observation (1985, also see 1986) that a two-month-old infant and her mother communicated through the "double video" proved cogently this point. In their research, the infant and her mother were in separate rooms and while each of them was interacting with the other through images on a monitor TV, suddenly the images were replaced from live to replay images. The observation demonstrated that after several seconds, the infant began to show distress and finally gazed away from the (replay) image of his/her mother even though the video image of his/her mother was smiling. Terefore, As Reddy, Hay, Murray and Trevarthen (1996) summarized, "infants are born with a readiness for communicative interactions" and are active partners "seeking both to initiate and influence the course of communication" (p. 267).

More recently, the significance of such infants' interactions with close partners has been considered in similar contexts of TOM. For instance, Harris (1989) referred to the observation that, around one-and-half year old, infants start both to comfort and to hurt his/her playmate. He suggested that these actions cannot have any significance without the child knowing how their actions would effect the partners. Dunn's striking observation of conflicts between toddlers and their older sibling or mother (1988, 1993) proved the fact that the toddlers knew how their actions could disturb feelings of the older sister/brother. They broke the older siblings valuable things, or put disliked things near the siblings. They also justified themselves by insisting to their mothers how evil the older siblings were. Sullivan and Winner (1991) also described a similar anecdote showing a two-year-old girl's full understanding of others possible feelings and instrumental deceit action. The girl confessed to her mother that she deceived her aunt by pretend sadness to lure the aunt's sympathy to her when her aunt did not come to play with her. Further, according to Reddy's observation (1991), a ten-month-old infant stood in front of the TV screen on which his parents were watching a program, and smiled at them just like teasing them. Those evidences clearly suggest that infants can read others inner states and anticipate their next actions *in intimate relations*.

Comparing above studies with cognitive TOM studies mentioned earlier, one will find three dimensions obviously different between them: a) emotion versus cognition, b) reality versus fiction, and c) close persons versus general people. In cognitive TOM

studies, children were asked to infer *generally* how a *person* will do in a given *fictional* story. Although in Leslie (1994) and Baron-Cohen (1994, 1995), intaraction processes in a infant-parent dyad were considered, their focuses seems to be on *general capacities* to detect others' eye-directions and to read their intentions from the movements. They niether showed any concerns why the infant in the dyad like to share his/her attention with the other, nor considered who is the other in the dyad. In a dyad interaction sharing attentions mutually, the other should be the partner in a close relaionship, in other words, the *cpmpanion* (Bråten, 1996), neither poeple in general nor a stranger. In infant-close partner interactions, infants were observed their harmonized socio-emotional expressions to their companions according to the companions' inner states. This is considered why in the dyad interactions they must be motivated to know the intimate otheres' minds. This means that if the same infant interacts with a stranger, the results would be different from the one in infant-close partner interactions.

Here, to reconcile the gap between those two paradigms on children's understanding others, one can ask two possible questions: a) whether the ability of socio-emotional communication in infancy transforms into the cognitive ability of TOM in childhood in a fashion from TOM in close relations to TOM for people in general; b) or socio-emotional communication and cognitive TOM develop in parallel. The answer here is the second. Both emotional and cognitive understanding of others are considered to have own function in each other through all developmental phases. In their definiton of empathy, Davis, Hull, Young, and Warren (1987) suggested that there are cognitive and emotional empathy and they have different effects. Cognitive empathy may derive from relation to imaginative transformations and some form of verbal or symbolic encoding, while emotional empathy may depend on more affect- laden imagery. This parallel development hypothesis will be also strengthened by Reddy, *et al.* (1996). They insisted that communicative intentions cannot originate in a cognitive clarification of the nature of other persons as mental beings. Rather, "these intentions must originate in motivations" (p. 264-265) and "both knowledge about the effects of communicative acts on others, and the very communicative intentions themselves, i. e., the what and how and why of communicating, are changing and diversifying within interaction throughout life" (p. 265).

In addition to this parallel development hypothesis, as Fig. 1 illustrates, understanding others may vary depending on intimacy between the self and others. Why and how and what we communicate to intimate persons including parents, family members, close friends are because we like them. We are motivated to know and share why, how, and what the intimate persons think, feel, and do so. This propensity presumes to produce "a sense of we" (Stern, 1995) or "the space of we" (Nakano, 1997) and is basically characterized by emotionality. In contrast to this, when we infer why, how, and what people in general would think, feel, and do, we are likely to employ cognitive functions. For instance, just three years ago, a terrible earthquake hit one of our metropolitan cities, Kobe, and changed all parts of the city into scenes of the Hell. There were catastrophic situations far beyond our imagination. It is obvious to recognize the situation and feelings of the suffered were limited in vicariousness to the people who have never had any real crisis experiences. Here vicariousness refers to the imag-

inative participation in others' experiences (Hoffman, 1981). This suggests that the vicarious understanding of persons very looks like Piagetian understanding of physical causality achieved by inferring lowful consequences that an agent's action on an object results. In addition to that, it may be right to say that we are capable of extending cognitive empathy not only to human beings, but also to anything in this universe applying imaginations with personification. Thus one can reasonably dout that cognitive understanding others or the cognitive theory of mind may not derive from direct person -to-person relationships, but some form of verbal or symbolic understanding of pysical causalities.

Therefore, one may correctly claim to TOM researchers what is their postulated character of human relationship and how they show the relationship by applying the TOM paradigm.

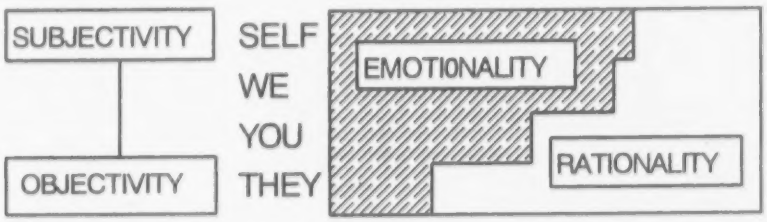


Fig. 1 A conceptual model of differentiated functioning of emotionality and rationality depending on closeness.

III. MIND VERSUS *KOKORO* : A PERSON-DIRECTED PSYCHOLOGICAL ENTITY

In past several years, some books on TOM were trauslated into Japanese (e. g., Astington, 1994 ; Bennett, 1993) and journal special issues (e. g., Japanese Psychological Review, Vol. 40, No. 1) have been published. The issue of TOM has now become one of the popular topics among Japanese psychologists. In Japanese, the term " Theory of Mind " is translated into " Theory of *Kokoro* ". However, it may be right to say that " mind" and " *kokoro* " are not equivalent in their precise sense. In a part of his ambitious review on psychoanalytic significance of the concept of *Amae* (dependence/indulgence), and the explanation of its validity in Japanese society, Doi (1973) explained that in Japanese there is no single equivalent word to " mind " which incorporates a conglomerate of cognitive, perceptual, and emotional functions. He asserted that the translation of " mind " into Japanese " raise the possibility of applying many terms that refers to different operational categories " (p. 227). Then he listed the Japanese candidates, including the terms that means intellect, reason, consciousness, attention, intention, disposition, emotion, and spirit. However, it may be true that in such compound senses of " mind ", in general, the rational functioning is rather regarded as taking a priority over the others.

On the other hand, Johnson (1993) allocated the translation of *kokoro* into " heart ", though " heart " is assumed to have a different implication from " mind ". He explained : " *Kokoro* is taken for granted as a mostly hidden and deep part of personal functioning. Although not used as a formal psychological term, at a folk level,

kokoro has the informal status of a motivational system that activates behavior through true feeling and sincerity" (p. 225). In short, it can be said that *kokoro* indicates the psychological function toward more specific to be a motivational-emotional entity, while "mind" denotes general, but rational-orienting functions.

This may be demonstrated by the recent appeal, "The Need for the Education for *Kokoro*", proclaimed by the Ministry of Science and Education of Japanese Government. It was proposed just after a gruesome murder happened last year that a junior high school boy be headed an innocent elementary school boy and left it at the gate of his school secretly. In this context, *kokoro* is presumed to imply disposition or propensity "to think of and understand others' feelings and to show a warmhearted affection toward the person". In short, it means a propensity to articulate "*omoiyari* behavior" (sympathy or emotional attunement). As Johnson (1993) described that "the development of a finely tuned sensitivity to the feelings and latent intentions of others is a crucial part of early childhood socialization" (p. 245), *omoiyari* is given the central venture in Japanese society.

Chen (1996) considered characteristics of Japanese adults' attitudes in socializing their children. He suggested that "it is interesting to note that this practice assumes that young children are loneliness-prone and that adults not only recognize this nature of children but also accommodate for it. This actively empathic support for it is in contrast with that of the Chinese and the Western societies" (p. 122). He concluded, that through socializing processes Japanese children develop behavior in accordance with cultural vultures: "the ability to be dependent in a sophisticated manner". This process was in contrast to the ability to be dependent in Western societies, and "the ability for knowing the pathos of things and for sympathizing and empathizing with the weak" (p. 123). Thus, Japanese children are expected to develop a sense of perceiving intuitively to what extent they will be allowed to be dependent on (*amaeru*) the person with whom they have a relationship. At the same time, they are also encouraged to show empathy and sympathy [see, Wispé (1991, p. 79-80) for the definitions] to others and to have concern with their inner states. In short, what is socializing in Japan is to read others' *kokoro* and show their own *kokoro* to others. Therefore, *kokoro* is assumed basically to be characterized by not only a motivational-emotional entity but also a propensity to consider others' inner states, i. e. "other-directed". In other words, a propensity to articulate *omoiyari* (sympathy or emotional attunement). It also should be added that this propensity to consider others' feelings is not restricted to human beings, but also engaged in personified objects. For instance, some Japanese mothers would say that: "Your carrots and lettuce are waiting to be eaten on your plate. Don't you think they must be sad if you leave them alone?", when they are trying to persuade their children at a dinner table to eat their vegetables.

Here, my point is not to present through the above discussion to prove either "cultural nationalism" or "chauvinistic uniqueness" of Japanese vocabularies and thoughts by referring to indigenous terms. However, one may claim this kind of discussion is simply "emic" (Pike, 1954), specific to the culture itself, but not "etic", more abstract descriptions and explanations based on more universal categorization. According to Jahoda (1982), emic approaches aim at describing behavior as a partial

structure of given cultural systems using indigenous terms. They mainly argue meanings and distinctions of the behavior within the system, independent from gauges outside the system, regardless if the meanings are standard or not. On the other hand, in etic approaches behavior is studied by using the gauges into which are brought the cultural systems targeted by an observer as an outsider. As Jahoda (1983) suggested, such gauges are likely to be regarded implicitly as being more scientific, objective, and universal because, in principle, etic studies can be replicated by applying the same procedure by any other persons, regardless of whether they are the members of a targeted culture. Perhaps, in line with this sense, the concept of "mind" may have been viewed as a more scientific and universal entity beyond its reality of one of English words.

The point that I am trying to present here, comparing differences in the concept of between *kokoro* and mind, is to examine what is the underlying basic propensity to generate, sustain, and enrich the nexus of interpersonal relationships. As postulated above, the hypothetical essence of *kokoro* is the propensity to articulate sympathy or emotional attunement (*omoiyari*) and other-directedness. Wisp(1991) discussed the roots of sympathy historically, ontogenetically, and developmentally, and concluded that the capacity for sympathy would be inborn (p. 92). She suggested that although "it is impossible to analyze precisely where, when, or how sympathy began" (p. 84), the beginning of sympathy may link to the mother-child interaction (p. 85). Reddy *et al.* (1996) also claimed in their argument on communication in infancy that communicative intentions emerge from innate motivations to engage psychologically with others, rather than from a late appearing cognitive restructuring of the nature of persons and a discovery of their minds (p. 267). It is certain that those affirmations of the innate motivational-emotional and "other-directed" propensity have much in common with the consideration that *kokoro* described above.

At the present, we can only conjecture the basic structure and characteristics of *kokoro*. However, through comparative studies on differences between mind and *kokoro*, it will be more clarified and a more sympathetic communication theory of mind would be developed.

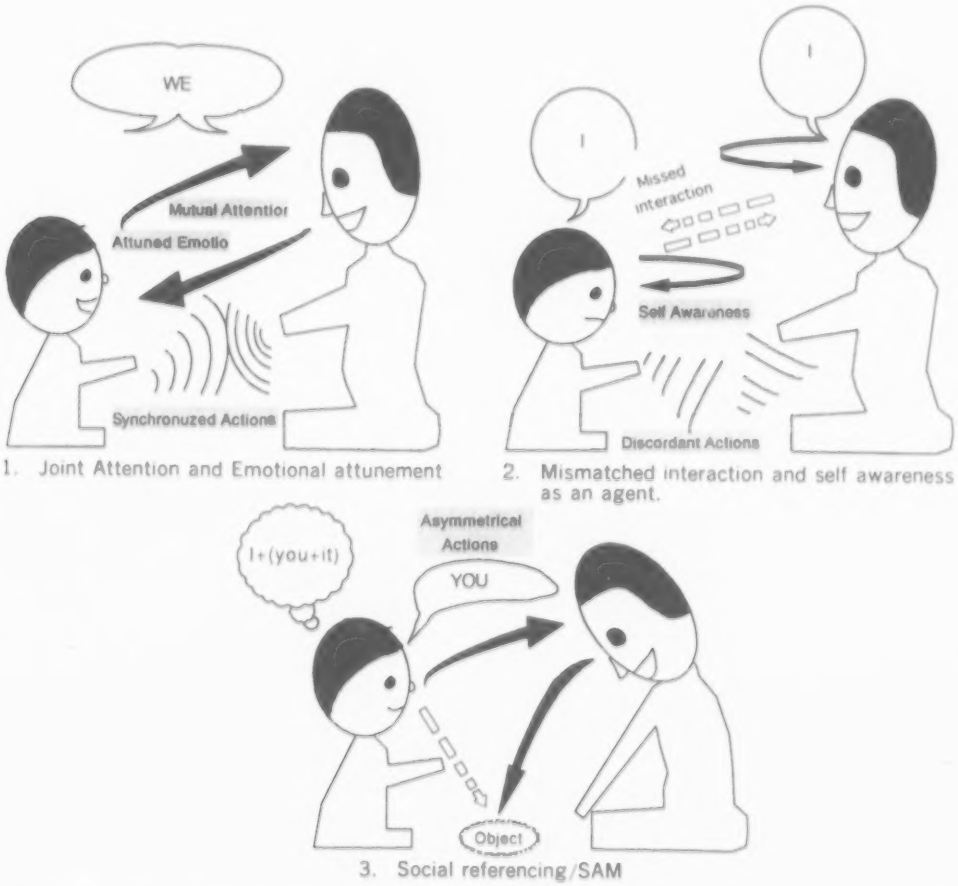
IV. TOWARD THE INTEGRAL APPROACH TO UNDERSTANDING OF SELF-OTHER RELATION.

I have presented limitations of cognitive studies on TOM and an alternate viewpoint based on the idea of the sympathetic propensity of mind. Finally, I would like to call for the integral approach of how children develop understanding of self-other relation.

In his review on recent researches of TOM in infancy, Moore (1996) categorized them into modularity theories (e.g., Leslie, 1994; Baron-Cohen, 1994, 1995), Piagetian theories (e.g., Frye, 1991), matching theories (e.g., Gopnik & Meltzoff, 1994; Meltzoff & Gopnik, 1993, Moore & Corkum, 1994), and intersubjectivity (e.g., Hobson, 1989, 1991, 1993, 1994). Then he concluded none of these theories are completely correct and all are of some value (p. 35). For them to be incorporated into a full theory of origins of social understanding, he proposed a variety of approaches for three compo-

nents of social understanding: the understanding of other agent, of self, and of self and other. This proposal seems to be too conventional and not specific because those three components are naturally essential in dyad interactions. However, his claim to incorporate those three components can still maintain its significance. As shown in Fig. 2, all of those theories may be available to one aspect of all sequential dyad interactions, not whole. Each theory might be valid for only a segment of them. Perhaps, some of thories may be more authentic than others to explain how to generate, sustain, and enrich the nexus of interpersonal relationships. It is also the truth that sometimes infants may attune their emotions to the partner, but the next moment they might engage activities according to their own interest, after then they could observe sincerely the partners actions. There can be certainly various forms of agent-other relations in a process of an interaction.

Therefore, to achieve an incorporated view on developmental understanding of others, we need an integral approach to find interrelationships of individual aspects of interactions. To do so, it may be required to re-consider and explore what propensity is required to postulate the authentic structure of mind.



1. Joint Attention and Emotional attunement
2. Mismatched interaction and self awareness as an agent.
3. Social referencing/SAM

Fig. 2 An illustration of understanding the self and other in three different situations of dyad interactions

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